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WHITHER?

In this fateful year, with all of our energies directed toward preparedness, it seems to me it may be entertaining, if not profitable, to look at the road along which our Association has come and, perhaps, try to see a little more clearly what its future field of activity should be. War is not unprecedented; indeed, it is not a new experience for most of us; and, while we recognize it as a great catastrophe, we trust that it is only an interlude and we will not lose hope nor turn our faces away from the future. On the other hand, we must not forget that these crises in human affairs are the expression of changes of conceptions in our intellectual speculations and, after the storm of battle has cleared away, new experiments, congenial to new ideologies, will claim our energies. I have asked most of you what the field of activity for the Association of American Medical Colleges should be, but the answers are so diverse I will not burden you with a summary but rather look for inspiration from some of the experiments we have already made.

THE FRONTIER

In 1846 a call was made to form the American Medical Association, with one of its chief objectives "the elevation of the standard of medical education in the United States." Nevertheless, for almost fifty years the Association disregarded this purpose. This is not surprising when we remember that there were few rationalized procedures in medicine and that it was a period of *laissez faire*; exploitation extended from human labor to natural resources. Any school of thought in religion, economics or medicine, no matter how bizarre, gained supporters. Quantity, not quality, was the objective and, with every one boasting, criticism was not tolerated. Fresh water colleges sprang up all over the country, motivated by optimism rather than educational standards. We had more "red school houses" than any other country; more cattle on more ranches; more miles of rail road track; more Main streets and more medical colleges.

In 1876, the Association of American Medical Colleges was formed and stated as its objective "The advancement of medical education in the United

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States, and the establishment of a common policy among medical colleges in the more important matters of college management." The treasurer's report shows that the income amounted to about \$110 per year from a membership of 22 colleges. After six years the Association ceased to meet. Its discussions may not sound too strange to us for they centered around better premedical training, a revised curriculum, disciplining of the member colleges, better teaching by the faculties and amendments to the constitution.

ORGANIZATION

In 1890, at Nashville, the Association of American Medical Colleges was again organized and Dr. N. S. Davis, who had been active in the first Association, was elected president. While the constitution, as adopted, did not define the objectives of the Association, the long service of the secretaries gave a continuity to its program. One cannot read the first fifteen years of our history without being impressed with the fact that this period defined medical education and examined all of the problems which have since vexed us. The Association established jurisdiction over its membership and set up the practice of inspection of member colleges. Premedical education became a requirement and a four year course of medical study was adopted. Laboratory training in the basic sciences, under skilled teachers, was approved and the question of adequate library facilities was examined. Osler, in his president's address, warned the Association of an enormous extension of the curriculum ahead and the substitution in the third and fourth years of daily contact with the sick for much of the didactic work. The fifth or intern year was being discussed and the Association was working in close cooperation with state licensure boards to establish uniform state educational requirements for practice. Conferences were held with national educational bodies and, with the discovery of the art of pedagogy, the methods of laboratory and clinical teaching began to find a place on the annual programs, while greater uniformity in student records made it possible to evaluate the work of a student who had been in more than one school.

I think there is no doubt that the quiet and unostentatious work of the Association of American Medical Colleges in a peculiar measure influenced the progress of medical education in this country. It kept the weaker colleges in line and gave hearty support to every advance attempted by the various licensure boards but, more remarkable, it did all of this work on an annual income of about \$1,200.

We must not forget that other influences were at work; the frontiers were closed, continental exploitation was over and reform was in the air. We would not start any more medical colleges but we could make those we had do a much better job. We still believed in "book learning" for it was not till 1907 that Woodrow Wilson said: "You know that with all of our teaching we train nobody; you know that with all of our instructing we educate nobody." We knew we had too many medical schools and were graduating too many doctors but our Association possessed no machinery for closing poor schools. In 1895, E. Fletcher Ingalls, in his president's address, seemed to have no doubt that the

function of the Association was to improve medical education; but he also noted that every time a college had increased its requirements there had followed an increase in the size of its classes.

In 1903, the House of Delegates of the American Medical Association set up a permanent Council on medical education and, with the appropriation by the Board of Trustees of \$5,000, the first annual conference was held in Chicago in 1905. It was a great good fortune for American Medicine that Arthur Dean Bevan, a thoroughly trained educator, forceful and straightforward, was chosen for Chairman; also his long service insured a constant and uniform policy. The Council introduced new zones of influence into medical education supported by adequate financial resources and wide publicity for its findings; its objective was identical with that of the Association of American Medical Colleges, so it might seem that our day of usefulness was over; but such was not the case and, perhaps, as a result of the broader and more frequent conferences with the examining and licensure boards and the Council, or more likely under the challenge of new problems, growing out of the reorganization as university colleges, the Association gained in interest and prestige. I think, however, that the Council did have an influence in determining our field of activity along a line expressed by *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*, in 1901, when it spoke of it as "a pedagogic Association." Henry B. Ward, in his president's address, analyzed the Council in these words: "Even though it remains a purely advisory body and has no legal status, the Council on Medical Education will undoubtedly exercise a strong, indirect control over medical schools by its scheme of reports and inspections and by scattering broadcast the results of these inspections. . . . It is easy to see, consequently, that the publications of the Council represent very largely an individual trend of opinion and it would be strange if certain aspects of some questions did not fail to receive their full representation; . . . and while the process of evolution should be influenced in the right direction, it is questionable whether the limitation of the process should be left in the hands of so small a group of individuals, however broad and impartial these persons themselves may be." In the light of experience, I am of the opinion that it would be of great benefit to our colleges and the American Medical Association as well if a representative of our Association were given a permanent place in the deliberations of the Council.

REORGANIZATION

The next period would seem to end conveniently with the World War; it is a period hard to understand and more difficult to characterize in a few words. James Truslow Adams called it the age of the dinosaurs, Theodore Roosevelt might have thought of it as the age of conservation, but for our purpose it was the period of reorganization. Our deans had to learn to speak the language of University Senates, dine with boards of trustees and wear academic gowns. We learned the difference between endowments and grants-in-aid and puzzled over clock hours, credit hours and transcripts. The faculty ceased to be a unit body but was divided into lay professors, laboratory workers and clinicians with the latter divided into a multiplicity of specialties. Faculties and staffs gave place

to administration by departments and, while we might require nine hours work per day for the student, the instructors should have one-half time for research. Discussions were held concerning the difference between graduate and post-graduate, while our programs considered aptitude, correlation and motivation to the tune of a continually rising budget.

Notwithstanding the feverish tempo of the country during this period, our Association worked diligently and the work was good. I should like particularly to mention the work of Dr. Zapffe's committee on equipment which gave meaning to words like adequate and satisfactory, also the exhaustive work of the committee on education and pedagogics which brought order out of the chaos in our arts colleges, making possible a two year premedical course. While our presidents were occupying themselves with the "principles of medical education," "functions of the medical school," "curriculum making" and "needs of coordination in medical education," our membership was occupying itself with symposia in clinical teaching and the use of the teaching hospital in the new scheme of medical education. The dispensary had been discovered as a teaching asset and one suspected that before long something would be done about it. The period carries little criticism for everyone seemed too busy planning and reorganizing to stop and evaluate results. To be sure, the state licensure boards thought their examinations might reveal a weak point in medical education here and there and a few voices had been raised concerning limitation of registration; but, on the whole, the atmosphere was that "all was well with the world" and, with the newly amended constitution, equipment and approved methods, our work was cut out for us and a competent future medical profession was assured.

DISILLUSIONMENT

The next period, coming down to the present, is much more difficult to evaluate; perspective is distorted by nearness and results are still coming. It is too bad that a Gallup poll, or a questionnaire, cannot be employed. Perhaps, before I dare characterize our times, we should examine what we have been doing. To be sure, the Council meets regularly and, though it has changed its name to "Annual Congress," that is probably unimportant to anyone except our catalogue librarians. Our Association ceased meeting with the Council in 1923, which may mean little or much, depending on the viewpoint; however, the change of meeting place introduced a new element in our annual programs, making it possible for the membership to become familiar with the methods of teaching employed in the schools visited. Our committees continued to function; our representatives sat at conference tables; we finished work begun and initiated new programs, notable among which was the publication of *THE JOURNAL OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES* which I believe is unique in the history of medical education. Clinical clerk teaching became an accepted routine as teaching hospitals were made available. Early in the period, Dr. Zapffe made a study of the cost of medical education which attracted a great deal of attention and paved the way for many other cost accounting studies in education. Endowments became a major influence in the development of medical

education and, in volume 5 of our JOURNAL, 56 pages were devoted to listing Fellowships, Funds and Prizes available for graduate work in the United States and Canada. Papers in graduate and postgraduate medicine became frequent visitors on our annual programs.

In 1929, our Association began an experiment in scholastic aptitude tests for medical students which has become one of the outstanding psychological experiments in this country and seems to have won for itself a permanent place in American medical colleges. Undoubtedly the way was prepared for this experiment by the frequent studies of medical student scholarship and the gradually growing conviction that two years of premedical college preparation did not necessarily insure good medical scholarship. Perhaps, a growing attention to the student was also responsible for a new solicitation concerning his health which prompted student health programs and periodic health examinations.

Another activity of the Association during this period has been the study of applicants and applications for medical colleges. It cleared up the question of multiple applications and showed what students were rejected and why and where. As a logical outgrowth of this work, the record of student accomplishment has been compiled and furnishes an opportunity for comparison of the student's medical college achievements and his work in college. I think I will not emphasize change of entrance requirements to three college years, nor the intern year, nor the three years of specialty training in which we are having an indirect share, for they are only the logical outcome of the growing mass of medical lore and the task of better training to which we have set our hand.

The most deeply significant thing in this period, and indeed in our whole career, is the incorporation of our colleges into the American University system. It has removed the odium of vocational training from our medical schools and given them the dignity of engaging in graduate education while our faculties may now belong to the community of scholars. Medical college budgets are counted in six figures, and this Association spends twenty times as much per year in our Association activities as it did a quarter of a century ago.

At the risk of becoming a social pariah, I shall suggest that this period be characterized as disillusionment. We have shared with the rest of society in the effects of war, prosperity, economic collapse and now preparedness. We have watched the conflicts of minorities for positions of advantage, social unrest in our own country and disruption of governments through strange ideologies abroad. You are as familiar as I with the floods of criticism which the past fifteen years have poured over our universities and their system of education. We have achieved three years of college preparation only to learn from President Butler of Columbia that it is "increasingly difficult to secure good courses of instruction for those who have the proper desire to gain some real knowledge of a given topic without intending to become a specialist in it." President Kinley of the University of Illinois speaks of "the absence from our faculties of men who have either the knowledge or the ability to correlate their particular subjects of instruction with collateral or allied subjects." The results of our efforts seem to exemplify the Law of Diminishing Returns.

Our medical colleges represent a greater investment in buildings, equipment and faculties than ever before in the whole history of medicine. We have taken up our problems one after another and attempted to solve them and yet the problems are still with us. From the criticism encountered on every hand one is forced to the conclusion that our colleges are inadequate and through them the future of medicine is committed to "earthen vessels."

I have followed the tradition established by a number of former presidents of the Association of American Medical Colleges in examining our achievements. This review covers sixty-five years of effort on the part of American medical schools to improve the practice of medicine in this country through better education and training of their graduates. I am sure it is not a Pollyanna attitude to conclude that much good has been accomplished. I have no desire to claim a lion's share of credit for our Association, for such betterments as may be claimed are the outgrowth of sincere cooperation with the Council on Medical Education and Hospitals of the American Medical Association and the Federation of State Medical Licensing Boards, together with various social forces we have been able to employ.

L'ENVOI

And now where do we go from here? I appreciate the folly of attempting to cast a horoscope of the future even though we are trained in making prognoses. We have learned a few principles which can safely be incorporated in our future plans and there is a bit of unfinished business that we must still attend to and, as for the future, may I repeat President Myer's quotation from Kipling:

"And each for the joy of working
And each in his separate star
Shall paint the thing as he sees it
For the God of things as they are."

I think our past experience leaves no doubt that all future efforts to secure a better medicine for the American public must rest in a better medical educational program. Adequate medical care will always mean adequate medical training.

At the first meeting of the Council on Medical Education, Dr. Vaughan said: "There is no crying need for more physicians" and, in 1936, Dr. Bevan stated that: "One of the most important problems now confronting the medical profession of this country is the overcrowding of the profession. The overcrowding is so great that it has become a menace both to the public and to the profession." It seems to me that this problem is on our own doorstep and that it is our business to find a solution. It is not enough to reiterate that we must raise the standard of character, fitness and scholarship. The problem is not a simple one, but we have learned a few things about it; as, for instance, we know that increasing the years of preparation and study does not reduce the number of medical school applicants, also that three years' time spent in any college does not necessarily improve the character of work done in medical colleges.

The basic medical sciences might profitably be reexamined as to their course,

content and objectives in medical education. As an anatomist, I am curious to know what the effect would be on the anatomies and also on medicine, if they were pushed back into the arts college with physics and chemistry.

And by way of other unfinished business, the curriculum is much over-crowded and contains some archaic material. If our undergraduate medicine is to be broad, we must avoid specialization for a faculty of specialists naturally tends to reproduce its kind. I think we all agree that while specialization is and has been of tremendous value to the profession, it can be begun too early and we must agree with President Coffman of Minnesota that "the more an individual is sharpened to a point, the broader the base should be." President Wilbur expressed the same idea: "The ordinary specialist is a menace as a teacher for the student studying for the degree of Doctor of Medicine. He turns too brilliant a light on too small an object."

Finally, the fifth or intern year is almost universally accepted by medical students; but as an educational year it, perhaps, still needs clarification and I am certain that it could be integrated better with the program of the four preceding years. Medicine is still an art, needing the inspiration of great teachers as well as the enthusiasm of tireless young minds.

Interrelationship of Pharmacology and Therapeutics*

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This occasion gives me an opportunity to present for general discussion a number of questions that have concerned me for some time. I do not propose to inflict on you just another general paper on what is wrong with the teaching of pharmacology or therapeutics, but rather will try to state the problem, define the issues and present the questions, hoping that the general discussion which will follow will help make clear to me, and I hope to others, a situation that is quite vague.

It is my belief that our troubles stem, in part, from lack of precise definition. For instance, there seems to be considerable difference of opinion as to the scope of pharmacology. In the definition of Goodman and Gilman¹ pharmacology includes within its borders a vast subject matter. According to them it "embraces the knowledge of the sources, physical and chemical properties, compounding, physiological actions, absorption, fate and excretion, and therapeutic uses of drugs." Sollmann² makes it a little less extensive by defining pharmacology as a "study of the action and uses of drugs." Both definitions include therapeutics within the scope of pharmacology. Others, however, make a distinction between the two, chiefly in that the subject matter of pharmacology is related to the laboratory and the use of animals, whereas therapeutics is related to the clinic and patients. Thus, McGuigan³ states, "While pharmacological knowledge is based largely on experiments made on laboratory animals, there is not the slightest reason for such study unless something is gained that can be carried over to aid in the treatment of the sick patient." From one point of view, if drugs are studied in laboratory animals, the science is pharmacology; if in man, therapeutics. Another school of thought differentiates pharmacology from therapeutics on the basis of whether or not the drug is given to a normal animal or man or in the presence of disease, pharmacology being the study of the action of drugs in the normal, therapeutics, in disease. This distinction is an artificial one because the full knowledge of the action of some drugs can only be shown in the presence of disease, which, of course, includes disturbances in function; e.g., digitalis in auricular fibrillation, morphine in pain, mercurial diuretics in edema, etc. How can the effectiveness and action of liver extract be studied except on a patient? In fact, the assay of liver extract is regularly made on patients with pernicious anemia. Should this knowledge of drug action be withheld from the student in

*Read before the American Society for Pharmacology and Experimental Therapeutics, April 16, 1941, at Chicago, Ill.

1. Goodman, Louis and Gilman, Alfred: *Pharmacological Basis of Therapeutics*, The Macmillan Company, New York, 1941.
2. Sollmann, Torald: *A Manual of Pharmacology*, 5th ed. W. B. Saunders Company, Philadelphia, 1940.
3. McGuigan, Hugh Allister: *Applied Pharmacology*, C. V. Mosby and Co., St. Louis, 1940.

his course in pharmacology and only given to him in his clinical work? Our first problem, then, it seems to me, is to come to an agreement on the scope of pharmacology.

Our next problem follows: What should the content of the pharmacology course in medical school be? It would seem obvious that no matter how scope may be defined the material taught in medical school must be limited sharply because the teaching time is so short. Where must the emphasis be placed? Lamson⁴ points out that it is the function of teachers in medical school, regardless of department to think and teach in terms of the human body. He suggests that our interest should be directed to the reaction of the human organism to drugs. One might even go further than this and suggest that the only reason for a course in pharmacology in a medical school at all is to give the student an opportunity to learn how the human body will react to those drugs that are useful in the treatment of disease. It may be a fascinating exercise to study in detail the action of strychnine and aconite, but these drugs do not have any clinical value and in a great hospital, such as Bellevue, they do not even appear in the formulary. The problem is analogous to the time allotted for the teaching of different diseases by the department of medicine. When I was a medical student, a considerable number of teaching hours were devoted to typhoid fever, then a relatively common disease. Now that the disease is so rare that many students graduate from medical college without ever having seen one patient with typhoid fever, only a short time is taken up in its teaching. Yet more is known about typhoid fever than was known twenty years ago and an ambitious teacher thoroughly familiar with the subject could undoubtedly spend profitably an even greater amount of time on this subject than in the days when I was a student. In like manner should we not limit the subject matter in a course in pharmacology strictly to what is useful in patients; and if so, should not the relative weight be roughly the same as the clinical importance?

The next questions concern themselves with the mechanics of teaching: How much time should be taken up with the organic chemistry, especially with the relationship of structural modification to physiological action; bio-assay; species difference in the reaction to drugs; cellular pharmacology as opposed to the study of reactions of the organism as a whole; toxicology and the treatment of poisoning; the supplementary action of drugs that have no therapeutic applications?

Can these questions be answered generally, or would the answer depend on the individual subject matter, or, perhaps, on the present trends in therapy? For example, a few years ago when physicians used digitalis in tablet form or tincture, there was little need to give the student a thorough grounding in the comparative pharmacology of the individual glycosides; but now that a number of glycosides are available for clinical use and possibly are to be preferred to the crude drugs, such basic training seems highly desirable. This example illustrates, then, how the present trends in therapy do influence the subject matter taught in pharmacology.

4. Lamson, P. D.: Suggested Revisions of Medical Pharmacology; *Ann. Int. Med.*, 13:161-186 (July), 1989.

In laboratory exercises how much time should be allotted to studies on the human reactions to drugs? How much use could be made of objective and quantitative methods in normal and diseased conditions in man? Could use be made, for instance, of the Hardy-Wolf technique for the study of analgesics, or the Miller-Abbott tubes for intestinal antispasmodics?

Together with a discussion of the teaching of pharmacology comes the problem as to when in the medical curriculum the subject should properly be taught. At present, we usually find it placed in the second year, together with physiology, pathology and bacteriology. The effects of teaching pharmacology so early in the medical curriculum are quite obvious to anyone teaching students in the fourth year. There has been no continuity between the course of pharmacology and therapeutics. The student, therefore, having forgotten basic principles, tends to learn therapeutics by rote. Would not our medical curriculum benefit greatly by placing pharmacology in the third year, at the same time that clinical medicine is taught? A direct continuity could then be established between the study of the reaction to drugs in normal man, and the use of drugs in diseased conditions. Immediate and continuous application fixes the principles of therapy in the mind of the student in a way that no other method of instruction could possibly accomplish. The teaching of a so-called laboratory subject in the third year would have an excellent effect on the student, showing him that there is no separation between so-called preclinical and clinical sciences. It will also encourage him to continue to make careful objective observations in his clinical clerkship such as he learned to make in the basic sciences.

These, then, are the questions that I propose for general discussion:

1. What is the scope of pharmacology, and what specific part of this material should be taught in a course in pharmacology in the medical school?
2. How should pharmacology be taught with particular reference to the possibility of using human material for laboratory exercises?
3. When in the medical curriculum should pharmacology be taught?

The answers to these questions have a direct bearing on the interrelationship of therapeutics and pharmacology. A precise definition of scope is not only necessary to define the content of the course in pharmacology but the content of the course in therapeutics and the relationship between the two, if they be treated as separate subjects.

It is generally recognized that most students graduate from medical colleges with a highly empiric knowledge of drug therapy and are thus unprepared to evaluate critically the medical literature and the brochures of drug houses. This is not entirely the students' fault but arises in part, if not wholly, from the large gap between his course in pharmacology and the clinical application of his knowledge of drugs. One suggested remedy is a review course in pharmacology in the fourth year. Such repetition would, of course, be helpful to the student. However, there are practical difficulties in that the curriculum is already overcrowded. Rather, should not our energies be directed toward providing for

immediate and continuous use throughout the rest of his medical course of the knowledge gained in his work in pharmacology in somewhat the same manner that the pathology learned in the second year is continuously applied in the third and fourth years and during the internship?

I am most grateful to Dr. Thienes for the invitation to define the problem here at this time, and will feel doubly grateful if the discussion tends to clarify the issues so that a constructive program interrelating the teaching of pharmacology and therapeutics can be evolved.

How Pharmacology Will Need to Prepare Itself to Correlate with Therapeutics*

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Graduates and undergraduates sometimes ask where one goes to learn how and what to teach in pharmacology. An ideal answer is wanting, but the challenge is good for us. Certainly, it is not to be found in the seclusion of even the best laboratory but in a union with therapeutics, not a paper union, but one well integrated and closely knit, such as Drs. DeGraff and Hirschfelder visualize. One-half the answer to the inquiring student is a laboratory where he is protected from all irrelevancies while learning carefully at first hand the relatively few drugs of known value to the sick; the other half is the chance to apply the logic of acquired facts in diagnosis and drug therapy. The discussions of the other speakers will, in thought provoking details and proper perspective, show how these two can become one enterprise. This idea is not a new one, neither is the knowledge out of which therapeutics can be reconstructed entirely new. Since my part is to act as chinking, I will be little subject to the restraints of logic and sequence resting on the other speakers. Time will be given to some of the encumbrances blocking therapeutic advance for which pharmacology may be, at least in part, responsible.

By way of orientation, may I recall two incidents of our recent past?

In Baltimore, in 1938, spokesmen for our Society were reassuring as to our teaching and research. Self-satisfaction sprang from an enviable record of annual programs of scientific merit, a journal ably edited, a carefully selected membership. Only Dr. Lamson asked for a new teaching technic. A casual onlooker, on that occasion, might have felt that there was little room for criticism of the Society's policies or practices.

But Dr. Edmunds had earlier (1930) exposed to medical deans the very disturbing obverse side of the picture. For the improved status voiced in Baltimore, we owe much to his forthright analysis of things as they were. That we now pause for self-appraisal attests the hope that we are not jelled and that further fact finding may improve us.

Dr. Edmunds had the task of showing administrators, on a data basis, the needless barriers hampering pharmacologists in medical education. But there is more to the story. While curriculum committees and deans can be blamed for the earlier barriers, further gains will rest on this Society, for it can often be heard by those deaf to individuals, and we must know that even for progressive educators, administrative problems are much easier if departments remain in educationally tight cubicles.

*Read at the meeting of the American Pharmacological Society held in Chicago, April 16, 1941.

But now, back to what must be done to fit us for common cause with therapeutics. There are two alternatives. Is pure pharmacology and pure research our goal or are we to urge to the limit the principles of drug action in the prevention and cure of disease? If the former, then we should move off the medical campus. Of course, no one here holds this view, but the case is put to emphasize the other alternative which will open the way to infinite gains more quickly, not the least of which will be the giving up of much pharmacology detrimental to the future doctor and the initiation of many shifts of emphasis. Here are some of them.

Curare is pharmacologically fascinating but why clutter students' minds with it except to illustrate specificity, despite new researches suggestive of future therapeutic uses? Is there real need for more than one "iron"? Because of greater risks in use as anthelmintics and antiparasitics, may we now let history inherit pelletierine, santonin, quinine, quassia, thymol and, possibly even chenopodium and carbon tetrachloride, and teach that emetine, hexylresorcinol, male fern, carbarsone, methylrosaniline and tetrachloroethylene are equally efficient and safer? Up through both laboratory and clinic we must reiterate to the future doctor the physiology of nausea as caused by digitalis and opiates, lest he think later that he neglects his patients unless he gives them injectable "proprietarys." Can any physician find a legitimate use for arsenic other than as a parasiticide? Do you mind if the volatile oils are blue penciled except for use as flavors, in after dinner mints, as counterirritants, and a few as antiseptics and preservatives? What about terpene hydrate? Is the "Council" in error in adding creosote and guaiacol compounds to the "non-accepted" list and in being realistic about the category of organic metal antiseptics?

Many other drugs should be sacrificed. Some good enterologists disclaim the use of laxatives, except in emergencies (removal of poisons, parasites, gas, etc.). Is a scope of one or two salines, a mineral and a vegetable oil, cascara and phenolphthalein adequate? Sodium chloride and sodium bicarbonate solutions must replace soapsuds and other drastic enemata. Of course, medicinals such as hexylresorcinol or methylrosaniline against oxyuriasis must be added occasionally. Do we need to sort out the antiseptics, expectorants, local anesthetics, dermatologic agents, etc., etc.? I will not weary you further with a list that is still far from complete. You would not forgive me if I got started on glorified mixtures. There is also a very long pharmacological story about the abuses of the hypodermic needle. Vitamin polypharmacy is another of the evening's necessary tabus. These proposed curtailments may sound extreme but do they not come much nearer the mark than present day practice?

There are many other phases of the problem about which we will need to become active. Some of us know how hard it is to secure a rational USP XII drug scope; once a drug is admitted, it acquires a halo; only a version and high forceps operation will effect delivery. In place of this inelegant metaphor, one can safely say that a miserable pharmacology and therapeutic educational program is the reason for this kind of opposition. Faced with the polyglot drug scopes of

such official texts, individual institutions have set about the task of simplification in their own and their patients' interests. Under the lead of Dr. Hatcher, the New York Hospital compiled a fine list of drugs and formulas. Dr. DeGraff's institution has, I believe, a better one. Syracuse has published one. Other institutions have similar lists. Thus, the spurious and complex preparations and many duplications of even good drugs are ousted. Do not think that such efforts go unhampered, especially in open staff hospitals. From all of this it is obvious that the pharmacology teaching we must do is by no means all classroom exercises. Staffs, interns and nurses must be re-educated. Fortunately, we have clinical members. Some are here and are urged to give their views frankly on these matters and on what is to be said regarding the need for revolutionizing the pharmacology program.

First, we must, by this varied program of informal teaching, prevent the clinics from undoing much of our teaching. It is not the clinic's fault. The fact is, pharmacology is still fairly young and has not yet adjusted itself as well to clinical needs as has pathology and some other divisions. Better teaching of sound principles that will enable doctors and interns better to judge the merits not only of older drugs but especially of newer ones, is the answer. The clinician does not wish to do the irrational prescribing still prevalent. It rests on just three months of pharmacology, with scant inducement or chance to add to his knowledge later. We hand him on, as a student, to the therapist whose pharmacology was likely more defective than his own, and to the detail man, for his continuing education, instead of standing between him and his impulses to prescribe un-standardized drugs. What wonder manufacturers can sell most "any concoction under the sun." Better clinicians sense the gravity of the problem and often put it this way: "If only the Schools could find some way to keep us up to date on our drugs." The therapist is not lacking in ideals; we are lacking in guidance. If we do not correct this miscarriage of our own efforts, we will continue to deserve and receive grudging support and recognition. Diagnosis, difficult as it is, would not claim 90 per cent of the physician's energies had he been taught in his formative years to weigh drug therapy equally carefully.

This is not a proposal to desert the laboratory for the clinic or to drag clinicians back to the classroom. Rather, will we do better by our own students if we understand the clinic's drug problems? It would be unfortunate if we were made solely responsible for the teaching of drug therapy, but wise pharmacologists will, if need be, walk the wards occasionally and attend therapeutic conferences and staff meetings. Another educational approach is the supervision of teaching hospital pharmacies. Such medical supervision strikingly improves therapeutics. Obviously, such activities require at least one medically trained experienced member in every pharmacology department.

An experiment of this kind, similar in purpose to the plan developed by Dr. DeGraff, and a few others, was published in *Hospitals* for January. A pharmacologist chosen by the staff, educated to the logic of the experiment, is the medical director of the pharmacy. Details cannot be given, but suffice it to say,

that as a staff approved yardstick every item in the drug room has been given a most rigid review as to usefulness and discarded when found wanting. Staff members, knowing that prescriptions may be challenged, put more thought into them. This kind of supervision is not perfunctory.

Contrast this picture with actualities. True to a practice general in the Federation, many instructors of pharmacology somehow give the beginner in teaching the impression that if he publishes research, all else will be added unto him—advances in rank, improved economic status, even flattering offers from afar. So they are, in due time. Nowhere, owing to the economic pressure on drugs, are the bad results so gross or so obvious as with us. Teaching ability and scope are less stressed; many pharmacology departments are only dimly aware of pressing clinical drug problems.

The instructor, geared to this tradition, often does research while teaching. Added to this unpedagogical state, the course usually begins with the "spring let-down" when students are without zest, and instructors are fatigued from having already given their major efforts to the teaching of physiology or biochemistry. Teaching thus tends to be routinized.

This is not meant to belittle research; we are only saying it can, and does, when so handled, detract from teaching. Utilized judiciously, it is obviously an invaluable aid. Many teachers, working incessantly in a narrow research field, become so specialized that much of the pharmacology they are obligated to teach, especially about drugs in diagnosis and therapy, is reduced to vague generalities. A few pharmacology department heads are even said to be cynical as to more than casual teaching of undergraduates, saying they are doomed to empiricism in the clinics and under the sway of drug houses anyway.

Going beyond the laboratory at present would be teaching pharmacology the hard way, but, ultimately, the easy way. When pharmacology is seen to be just as essential for the accurate diagnosis and therapy the student hopes to practice as are pathology and other laboratory services, it will be learned eagerly by both graduate and undergraduate.

There will be a sharp decline in the number of drugs taught and used; also a marked simplification of prescriptions since there will be more time to teach useful knowledge of the few really valuable drugs. The present limitless scope of drugs brands us as lacking in judgment. Suppose we turn ourselves into guinea pigs. Of how many drugs, totally new to us, could we acquire extensive useful knowledge in from 175 to 300 hours, working under the same distractions as does the undergraduate, with little chance to add to this knowledge later?

Am I pedantic if I refer to our almost universal disregard of standard nomenclature? Constant confusion bedevils the minds of teachers, interns, students, nurses, in fact everyone who touches drugs, including the manufacturers. Yet we condone in programs, official publications, classrooms, National Board and other examinations and in our conversations, names which are only vicious sales devices invented solely for therapeutic deception and unconscionable profits.

Correction is not easy, for even though standard names are taught in pharmacology, they are too often soon discarded in the clinics. But correction is implied as being one of the objectives of the correlation under discussion. It is a surprise to many clinicians that many drugs which they prescribe under trade names, have official names. They complain of this confusion and the consequent dangers to patients. They, and even we, blame drug manufacturers, not realizing that if trade names are ignored in clinical practice, they will quickly be discarded by manufacturers. The detriment of this evil to medical education is so insidious that we are, for the most part, unaware of its enormity. We have due regard for scientific accuracy and exactness in other phases of our work, but is a Society really scientific if it lacks a rigidly controlled nomenclature? In other divisions of medicine there is intense interest in exact nomenclature in the respective fields, but a show of open contempt for ours, for the obvious reason that we ourselves show no proper respect for it.

The name of our Society and of our Journal, and of some pharmacology departments, implies an abiding interest in rational drug therapy. What goes on in the best and worst clinics indicates far too much lip service on our part to this declared purpose of our existence.

The Teaching of Pharmacology*

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Before considering the question of how we should teach pharmacology, we should consider for a moment just what is the problem with which we are faced.

The essential nature and purpose of the study of physiology, biochemistry and pathology are radically different from the nature and purpose of the study of pharmacology. Physiology, biochemistry and pathology deal with the phenomena of nature as they occur in nature and with the causes of these phenomena. Pharmacology deals with the alteration of these processes or structures by chemical means, primarily in order to bring about restoration of health. A chemical substance becomes a drug when someone finds a use for it, whether this chemical is formed in a plant or in an animal or whether it is synthesized in the laboratory. The alteration of the physiological function of a tissue or an organ may become a therapeutic measure if someone can find an application for it; therefore, the more we know about how substances alter functions or affect the parasites of disease the greater is our chance for finding applications in therapy.

When we consider the problem of the teaching of pharmacology in medical schools, we are confronted primarily by two distinct problems: (1) The teaching of pharmacology to graduate students and specialists in pharmacology, and (2) the teaching of pharmacology to future practitioners of medicine.

There can be no question that the teaching of graduate students should be conducted in the broadest possible manner with special reference to the fundamental physicochemical, organic chemical properties and pharmacodynamic reactions of the drugs and of related chemical compounds, with special consideration of the literature and history of special groups of drugs and carrying our research from as varied standpoints as possible in the special field of the student's problem.

I agree with Dr. Dooley that since many of our graduate students will become teachers of pharmacology, we should train them in teaching the subject as well as in investigation. We should train them to give successful laboratory demonstrations and to lecture clearly and systematically, and we should encourage them to inspire other students with an interest in certain phases of the subject.

However, in the routine teaching of medical students, the problem is different. The medical student wants to know the drugs which will be at his disposal for the treatment of his patients. He wants to know about the anesthetics used for his operations; what heart stimulants to use for cardiac failure; the arsenical and

*Read at the meeting of the American Pharmacological Society held in Chicago, April 16, 1941.

bismuth compounds for syphilis; the sulfanilamides for infectious diseases, etc. He should learn how to get the best possible results with his patients, and in order to do this he ought to understand the underlying principles through which the drugs exert their action; their physicochemical and colloid chemical properties; their chemical structure and active chemical groups; the alterations which these undergo within the body; their pharmacodynamic actions and the exact sites and intensity of these actions when ordinary therapeutic doses are used; the toxic effects of over-doses and the means for the relief of toxic effects. Then, too, he should be shown how these pharmacodynamic actions can be applied to the treatment of disease. Otherwise, we have left him with only isolated facts which have no correlation and probably would be forgotten before he receives his clinical instruction. We should teach him how to correlate his fundamental knowledge with clinical application in order that that fundamental knowledge may command his respect and arouse his interest—for no student ever really learns anything unless he is interested in it. But if we can show the student how the effects of the salts and ions on the hydration of colloids determines their role in clinical use; how the distribution coefficients of the substances and the alteration which these substances undergo in the liver determines the effects and the clinical use of each of the various drugs; how the colloid chemistry and the oxidation of the arsphenamines determines both their therapeutic properties and their toxic reactions, then we have made a more intelligent practitioner who will get better results with his patients.

We should teach him, too, how the actions of the drug are applicable also to pathological physiology as well as to normal physiology in order that he may understand his principles of treatment.

In planning our course, both our lectures and the laboratory work, we ought to present the subject from its most fundamental aspects, but we should weave these fundamental properties so closely into the indications for clinical application that the student will realize their practical value and will wish to give these things his primary consideration when he undertakes the treatment of his patient. We should do this with such emphasis that he will not regard his treatment as being proper unless he has taken these things into consideration.

In our laboratory courses we should make the experiments which are done by the student as simple as possible, for otherwise he will devote so much time and attention to the technique of the experiment that he will not have enough time left in the laboratory period to give attention to the results. With simple experiments he has time to devote his full attention to the results and their significance. Experiments in which the technique is difficult are best given as demonstrations, repeated to several sections of the class.

Wherever possible, the experiments should illustrate conditions of pathological physiology rather than normal physiology, because this will give the student a mental picture of the condition that confronts him in his patient and will bring him closer to the problems of clinical medicine.

Besides this, we should be careful to include some toxicology, whenever possible, with experiments showing the treatment of poisoning and the chemical or physiological actions that are involved. We should also give the student personal acquaintance with the *materia medica*, the practical usefulness of the U. S. *Pharmacopoeia*, the *National Formulary* and *New and Non-Official Remedies*; the best preparations of the important drugs; the reactions involved in their chief incompatibilities and the most important special preparations of the *Pharmacopoeia*, the *National Formulary* and *New and Non-Official Remedies*.

In order to establish correlation with clinical instruction, we, at the University of Minnesota, during the course in pharmacology hold a series of correlation clinics in which patients are presented and the treatment employed is outlined by the clinician. The nature of the therapeutic problem, its fundamental basis and the relation which this bears to the general application of therapy; the results and the limitations of the treatment; the toxic phenomena encountered and the methods of avoiding them, are discussed jointly by the pharmacologist and the clinician. We feel that this has been very successful in arousing the interest of the students. The method is in its incipiency at Minnesota. It has been carried out well by Dr. Cattell and Dr. Gold at the Cornell University Medical College and also by others elsewhere.

One feature which we have introduced at Minnesota and which we believe has been very useful, is that after giving the directions for each experiment, the laboratory manual contains a series of questions regarding the theoretical significance of the experiment and the light which the experiment may throw on applications to therapeutics. These questions prevent the student from merely going through the experiment without correlating it with either theory or practice, and they also help fix the experiment in his memory.

Wherever possible, the students should perform experiments on themselves, as, for example, in testing the induction and duration of local anesthesia, the excretion of common drugs in the urine, etc., because such experiments are always particularly impressive, and they demonstrate, too, that man, as well as other mammals, can be used for laboratory experiments.

These represent a few of the viewpoints from which we have presented the subject of pharmacology at the University of Minnesota. At each institution the problem is somewhat different. Every instructor should present the subject in his own way, because the best thing that one's students ever carry away is the ability to look at patients from the viewpoint of the professor with whatever spark of inspiration or interest that professor may have been able to arouse. The test of the teaching is not what the student knows on the day that he finishes the course, but what he accomplishes in his subsequent career.

DISCUSSION

ON PAPERS OF DRs. DEGRAFF, DOOLEY AND HIRSCHFELDER

DR. F. A. D. ALEXANDER (Albany, N. Y.): Dr. Krayer has outlined a system for teaching pharmacology in which he has stressed the possibilities which could ensue from including clinical teachers in the pharmacologic teaching program, particularly in the laboratory sections. I want to report briefly our efforts with such a course at the Albany Medical College of Union University during the past three years. I am a clinician; therefore, my interest in medical students is primarily in the later years. However, inasmuch as my particular field involves, primarily, the use of pain relieving sedative and anesthetic drugs, it has been necessary for me to maintain an active interest in pharmacology. During the instruction of senior students in the use of depressant drugs, clinical situations occur repeatedly which impress me with the fact that while the students were usually thoroughly aware of the pharmacodynamics of the drugs involved, they rarely had a practical idea of the limitations and shortcomings of these drugs.

To cite a specific case; when a patient was observed who had an acute and severe overdose of a depressant drug, such as one of the barbiturates or one of the anesthetics, the student immediately thought of the treatment in terms of analeptics or stimulants rather than the maintenance of the vital functions by artificial respiration or resuscitation efforts. Occasionally, the precious time during which successful resuscitation might have been instituted was lost in the hurry and scurry for some drug to inject. In other words, their knowledge of stimulant-depressant antagonism was sound but their adaptability to a clinical situation was entirely dependent on the amount of common sense they were endowed with and almost invariably their pharmacological knowledge was a deterrent rather than an advantage in the treatment of the patient.

As a result of these facts, we decided that it might be possible to supplement the teaching of pharmacology by instruction in the limitations and shortcomings of drugs as well as their pharmacodynamics. Fortunately, we had the very active cooperation of the Department of Pharmacology and were able to convince the curriculum committee of the possible value of such a course. During the last three years, the course has changed somewhat as the value of particular experiments and sessions was established. It is now being given as part of the regular course in pharmacology under the supervision of Dr. Clark. There are always present at least two or three clinicians and each session is begun with a short discussion of the clinical application of the drugs under investigation. At the end of the session, there is another short discussion of the results.

I offer this, therefore, as a suggested method for supplementing the teaching of pharmacology, for three reasons: first, it has been taught in the Albany Medical College for three years with a measure of success; second, the students have been enthusiastic about the course; third, the students have come to the clinical subjects with a better conception of the modifications of drug action inherent in the essential varying situations of clinical practice.

What Is Wrong With the Teaching of *Materia Medica* and Therapeutics in Medical Schools?*

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For twenty-six years I have been privileged to be a member of the Maine Board of Registration of Medicine. It has been a source of great pride to realize that we in Maine had kept in line with other boards in maintaining high standards and accepting for examination only graduates of class A accredited medical schools. I am certain that we have given comprehensive, fair and practical examinations in all these years, and that at least we were able to determine satisfactorily those who were truly and properly fitted to practice in the state.

Oftentimes I have been asked if the medical graduates of today are better prepared and equipped for practice than those of twenty or thirty years ago. I have always answered in the affirmative. It seems absurd to ask such a question, for obviously our medical schools are turning out men with scientific knowledge and training far superior to that which we received. The advances and discoveries made in medicine in the past quarter of a century have been phenomenal. When I graduated we were just learning the theory and technic of the Wassermann reaction and the opsonic theory and index was first in evidence, as was the beginning of the use of vaccines. We knew little of endocrinology; radium therapy was unknown, and it was to be twenty years before we would learn of insulin. Surgical knowledge and technic was indeed limited in comparison to the great opportunities offered the young medical men of today.

The doctor of medicine who graduates today is a better man, in theory at least, than was he who came into the field shortly after the turn of the century. It is axiomatic. I believe, however, that the present day graduate lacks much of the practical knowledge that was ours, especially in the administration of drugs and medicines as therapeutic agencies. When I graduated in medicine, the men from my school knew *materia medica* and its therapeutic application, could write a prescription correctly and in proper Latin form and knew that there was such a thing as a National Formulary and a U. S. Pharmacopoeia. That is more than I can say for the schools of today. After having received two years of real teaching in *materia medica* and a year of drilling in prescription writing, I submit that we were able to practice common sense medicine and make use of official preparations and products, which, I contend, constitute the stock in trade of a doctor of medicine.

Two years ago the Maine Medical Association and the Maine Pharmaceutical Association commenced the exchange of delegates to their respective annual meetings. I have been the medical delegate and it has been a pleasure

*Read at the Thirty-Seventh Annual Congress on Medical Education and Licensure, Chicago, Feb. 18, 1941. Republished, with permission, from *FEDERATION BULLETIN*, August, 1941.

indeed to mingle with the druggists in scientific session. Parenthetically, may I state that I think it is time the medical and pharmaceutic brethren met together for consideration of the many professional matters with which we are closely concerned. There are few organizations in science so closely allied as are the medical and pharmaceutic professions and we can learn much that is mutually profitable by meeting regularly together.

At one of these meetings I was in conversation with one of the Maine commissioners of pharmacy and he asked me "What is the trouble with the young doctor of today? He can't write a proper prescription! Why, even the osteopath writes a better one!" Another druggist stated to me that a young doctor who recently located in his town came into his store and said "I'll have to have your help. I really don't know how to write a prescription!" These remarks disturbed me, especially as I knew the young man to whom the latter gentleman referred as a graduate of one of the leading medical schools.

As secretary of our board, for reasons which you well understand, I do not routinely take part in the actual examination of applicants. I was determined, however, to gain first hand information on this particular point and to find out if such alleged lack of training could be true. In the last five examinations given by the Maine board I have set the questions in *materia medica* and *therapeutics*. There is no necessity to give a résumé of the findings of all of these examinations, for one was just as poor as another. I do want to give you the questions and comment on the answers of the examination held in November, 1940; it was an eye-opener to me indeed.

Question 1.—(a) Name eight official preparations of iron and give dosage.
(b) Name six official preparations of mercury and give dosage.

Of the eighteen men who took the examination only three were able to name two official preparations of iron; in answer to the mercury question two official preparations was also the total number which could be named. Curiously enough, the majority of the men gave Feosol Tablets, Hematinic Plastules and Frosst's Ferroids as their answer. I don't doubt but that these are exceptional preparations, but whatever they are they do not conform with my idea of an official preparation. Nearly all did mention Blaud's pills. Of these eighteen men only one knew of Basham's mixture and he couldn't give its official name or its indication for use. One had heard of Monsel's Solution. This seems rather strange, for to me they are important and valuable medicinal adjuncts.

Question 2.—Write a prescription correctly and in Latin for a case of chronic bronchitis with cough, containing fluid extract of senega, fluid extract of squills, tincture of camphorated opium, syrup of tolu and water.

Not one man could do it correctly. Their attempts at Latin endings were pathetic, and they didn't even know the doses.

Question 3.—Write a prescription for la grippe containing acetphenetidin, quinine sulphate, camphor monobromate, caffeine citrate and codeine sulphate.

None of these were written correctly, and the Latin attempts were atrocious.

Three of the applicants did not even attempt to answer the question. One prescription called for twelve capsules, each one containing 18 grains!

Question 4.—Write a prescription correctly and in Latin, for rectal suppositories to be used in a case of acute cystitis in a woman, with tenesmus and frequent urination, containing morphine or opium, extract of *hyoscyamus*, extract of belladonna, with the usual cocoa-butter base.

Not one man wrote the prescription correctly. The majority stated to me that they never had been taught or shown how to write a prescription calling for making of a suppository.

Question 5.—Write a prescription for a quarter of an ounce of a 25 per cent solution of argyrol to be used as a collyrium.

Only one man of the eighteen came anywhere near writing this correctly or indicating the proper amounts. I explained that argyrol was not an official preparation. One man gave as directions that it should be "rubbed in thoroughly" and, believe it or not, another gave it in teaspoon doses. Only three men out of the entire class knew what a collyrium was. They could not figure out the amount in grains added to two drams of distilled water to give a 25 per cent solution; and these men come from medical school as qualified.

Question 6.—Give the rule for computation of the dose and state the amount of morphine that you would use hypodermically, after an appendectomy in a seven year old child.

They all did fairly well on this.

Question 7.—Name the alkaloids or glucosids from *physostigma*, *hyoscyamus*, *pilocarpus*, *belladonna*, *digitalis* and *opium* and give the dosage.

This question, too, was answered with a fair degree of accuracy. The dosage was a little off; some mentioned the dosage in minims and grains, but on the whole it was fairly well done.

The eighth question dealt with the diuretic action of certain drugs and this too met with fair success. The ninth question was to treat a case of chronic cystitis with alkaline urine and pruritus vulvae. Five men only knew that with the use of hexamethylenamin the urine must be acid to obtain proper results. For the pruritus vulvae the remedial applications differed tremendously. Proprietary ointments were generally advised. The tenth question was to write a prescription for seborrheic eczema in the metric system, containing precipitated sulphur, salicylic acid, zinc sulphate, boric acid, glycerin and camphor water. If the men had been taught the metric system in medical school they showed no evidence of it in answering this question. The amounts indicated were either too small or too large; their attempt at putting together this solution was a dismal failure.

Fifteen out of the eighteen applicants who took this examination did not attain the passing average. The day after its completion, several of the men came to my office and their remarks were upsetting and a little pathetic, to say

the least. Each one admitted that the examination was fair but he "knew he hadn't passed it." They stated it was about what they expected, for they were not being taught *materia medica* and *therapeutics* adequately or satisfactorily in their schools. Certain members had complained to the dean of their institution regarding the teaching of these subjects, but to no avail. One young doctor stated that his school had given him just two weeks of instruction in prescription writing, and that of a most cursory type.

After giving them an additional oral examination, I realized that a few did have fair comprehension of pharmacology and, with the promise that they would seek out some druggist or other suitable person and attempt to learn to write prescriptions, I passed nine of them. The other nine will have to be re-examined, for their ratings were from 17 to 50 per cent.

What is the answer? I believe that medical schools for the most part, are turning out a crowd of "scientists," "theorists" and "medical nihilists." Do their teachers plan that they shall supplement their collegiate instruction by a kind of postgraduate course given by the detail men from pharmaceutic houses? To me this seems to be the present day scheme. I have great respect for the qualified medical or pharmaceutic graduate who comes to me, detailing and demonstrating any real scientific medicinal product and I am glad to greet him and give him heed. When it comes to the "sample and blotter" boys who undertake to teach us how to practice medicine, I say it is about time that we protested.

The medical profession has "put over" too many nostrums, "patent medicines" and low grade proprietaries, as is evinced by the casual observation of the advertisements in the windows of almost any cut-rate perfumers' shop or department store, as well as of the cut-rate drug store.

I had occasion a few weeks ago to look over a druggist's prescription file of a week previous. I counted fifty-one so-called prescriptions before I came across one that was written correctly or scientifically and which called for official drugs and medicines in its compounding. There are many most excellent proprietary preparations on the market, but most of them have a short, catchy or coined name, which makes it easy for the laity to read on a prescription and remember. No wonder that "counter prescribing" is on the increase and no wonder, too, that the patient passes the name of the medicine about the neighborhood and among his friends as being recommended and prescribed by his doctor. The members of the medical profession have been shortsighted indeed, because in these latter years they have been wont to cast aside their knowledge of *materia medica* and to write prescriptions too generally and promiscuously for the myriad of proprietary pharmaceutic preparations which are almost daily detailed to us.

The medical student should have it emphatically stated to him that *materia medica* and *therapeutics* are still being taught and that they are two of the important subjects of the medical school curriculum. He should be given a course of adequate instruction during his medical study which would guarantee that he was properly schooled in *materia medica*, which I like to call the "backbone of medicine," before he attempts to obtain licensure.

Postgraduate Medical Education and Internships*

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and

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The problem of postgraduate medical education is a perennial one. A thoroughly satisfactory answer has not been evolved. A solution has been attempted in various ways, such as local clinics, university extension teaching and large symposia, all doing some good, no doubt, but none reaching the large body of the profession.

The ideal method probably would be for the practicing physician to return to his own, or some other medical school, for six months' intensive work every few years. Two considerations make this suggestion impracticable. In the first place, such a plan is not economically or professionally possible for the great bulk of practicing physicians, and, second, the medical schools are not organized to teach such large numbers of postgraduate students, even should they apply.

The belief is growing among students of this problem that the only really effective postgraduate education is that given to house officers in our hospitals immediately following their graduation. It is in the highest degree probable that if every medical graduate received at least two years of intensive training in hospitals before entering practice, the need for "brush-up courses" would rapidly decline. For the simple truth is that to carry much away from the medical mill the physician must bring a great deal with him. Too many physicians in the past have entered practice poorly equipped to keep abreast of the rapid current medical progress, with the sad result that many have been stranded on the shoals and in the back-waters of medicine. The future, even more than the past, belongs to the well equipped physician, for at last the public shows evidence of an interest in good medical practice which may culminate in a less ignorant attitude toward practitioners of medicine.

Should not the medical schools or state medical licensing boards require every graduate to take two years of hospital or laboratory training after the completion of his medical course in order to prevent the false economy of starting practice with inadequate preparation and to avoid the failure to conserve the student's heavy financial investment in his medical education? Most graduates spend one year in an internship, but only a small percentage of them receive additional hospital experience, even though it has been demonstrated that a graduate's professional, as well as his financial, success in practice is in direct proportion to the length of his hospital training.¹ Encouragement of the gradu-

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1. Commission on Medical Education: *Final Report*, New York, 1932.

ate to take this essential training helps, but those graduates who need it most do not take the advice, hence should be required to do so by the medical schools or state medical licensing boards, preferably the former. Logically the medical school should set the requirements for medical education, both undergraduate and postgraduate. Furthermore, the medical school is in a better position to judge the merits of various internships, and being in close contact with the student can obtain helpful information for him and give him useful advice if he seeks it. At present 17 medical schools and 21 state medical licensing boards require one year of internship; Duke requires two years.²

Recently an otherwise excellent article³ contained the following statements, which are contrary to our experience at Duke for the past ten years: The medical school, which requires an internship for graduation "must intervene not merely to supervise the choice but actually to guarantee the placing of the students," "must appear as a petitioner for favors from hospitals," "must pass lightly over the defects of the institutions kind enough to accept the eight or ten students at the bottom of the class," "having recommended a man for an internship, it will find reasons for not allowing any senior student to fail—causing a distinct drop in the quality of the work of the less diligent third or fourth of the senior class," and "will tend to fill with its own graduates most of the positions in the services which the medical school controls and uses for instruction." "The freedom of a student's choice is restricted and the result is harmful to students and medical schools." "Interns should be selected on scholastic records and relative class standing without personal recommendations except from disinterested third parties." "As 44 per cent of the state licensing boards and only 26 per cent of the medical schools insist on a fifth intern year, the protection of the citizens should rest with these boards and not be left to the haphazard practice of medical schools."

The following quotation from the same article seems to indicate that the medical schools are content with their present product and are not trying to improve it: "The average medical graduate of today is far better equipped to practice than the men trained by lectures and recitations a generation ago so that there is really less need for internship before graduation than there was when the fifth year requirement was first imposed."

The above statements, which may possibly have been true a generation ago when good internships were scarce, seem to overlook the fact that in 1940⁴ there were more approved internships and residencies than there were graduates to fill them. This year, 8,182 internships in 739 hospitals and 5,118 residencies in 587 hospitals have been approved by the Council on Medical Education and Hospitals of the American Medical Association, and only 5,097 physicians were graduated.⁵ Even if a large percentage of these graduates spent two or more years in hospital work, and they do not, there would still be vacancies.

2. Dock, W.: Responsibility for Choosing Interns and Internships; *J.A.M.A.*: 115:657-8 (Aug. 31), 1940; also Editorial: Internships, *J.A.M.A.* 115:785 (Aug. 31), 1940.
 3. Council on Medical Education and Hospitals of the American Medical Association: Report, *J.A.M.A.* 115:686-784 (Aug. 31), 1940.

The following statements in this article are correct as far as Duke University School of Medicine is concerned: "The school should confine itself to supplying students with a list of recommended internships." "The whole responsibility for choice and attainment of internship should rest on the student." The school should limit to one-half or less of the total number that group of interns chosen from local graduates." Two years of hospital or laboratory training are required of all Duke graduates and 80 per cent of them have had more than this minimum. The students select and make their own arrangements for this training in any institution approved for internship or residency by the American Medical Association. Of the 312 interns and residents who have spent from one to seven years in Duke Hospital from 1930 to 1940, 43 per cent were graduated from Duke and 57 per cent from 46 other medical schools. Of the class graduating at Duke each year, 25 per cent have accepted internships at Duke Hospital and 75 per cent in other hospitals from Seattle to Miami.

Even though there is an excess of approved internships and residencies, the number should be increased in teaching hospitals. A university hospital should not try to operate with as small a house staff as possible, but should provide for as many interns and residents as can be given adequate training. The universities should regard these men and women as being graduate students, as are those in the graduate school of arts and sciences. If fellowships are justifiable for the latter, maintenance and a small stipend should be available for the former. Duke is following this plan, and though a house staff of 92 may seem high for 604 beds, and actually is expensive to maintain, we feel that a medical school should be equally interested in postgraduate as in undergraduate medical education.

What should be the content of this internship?⁴ Unfortunately, some of the state medical licensing boards insist that it be a "rotating" service, which often provides merely a smattering of several subjects. The advantage of "straight" services for those entering the specialties is obvious, and if a graduate plans to enter general practice—a consummation much to be desired—straight services in medicine, pediatrics and obstetrics would equip him much better than the usual rotating services.⁵ Recently attempts have been made to combine these three fields in "mixed" internships.

The medical internship at Duke Hospital is twenty-four months in duration, three months each being devoted to rotation to junior ward service, outpatient department, laboratory, neurology, psychiatry, private wards and senior ward service, and a final three months as house physician.

In addition to the usual straight services in obstetrics and pediatrics, Duke Hospital has added a combined obstetric-pediatric internship of one year for graduates who plan to go into general practice. Three months of this time are spent in hospital obstetrics and gynecology at Duke under Dr. Bayard Carter,

4. Council on Medical Education and Hospitals of the American Medical Association: *Medical Education in the United States, 1934-1939*, A.M.A., Chicago (1940).
 5. Davison, W. C.: Opportunities in the Practice of Medicine, *J.A.M.A.* 115:2227-2232 (Dec. 21), 1940; *Diplomate*, 13:161-158 (Apr.), 1941.

three months on the Outside Obstetrics Service, Charlotte, N. C., under Dr. W. Z. Bradford, five months in hospital pediatrics at Duke and one month on infectious diseases at the Sydenham Hospital, Baltimore, under Dr. M. G. Tull. Most of the graduates who have had these obstetric-pediatric internships and 40 per cent of those who have had straight pediatric internships at Duke have gone into general practice.

SUMMARY

All medical graduates should be required by their schools or the state medical licensing boards, preferably the former, to spend two years in hospital or laboratory work. University hospitals should provide as many internships and residencies as possible for graduates of other schools as well as of their own school. The good physician must be a life long student; he should subscribe to and read the current medical literature; he should keep his library modernized by the purchase of well considered books—all habits which, we hope would tend to become fixed during two years in hospital or laboratory work. If all physicians were keen students of medicine and had had two years of hospital training, the local medical society would be the best place for postgraduate training.

Is the Study of Comparative Anatomy of any Value to the Student who Expects to Study Medicine?

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During the past several years, a number of premedical students have told me that they had been advised by the medical schools to which they had applied not to study comparative anatomy as it had little or no value as a preparation for the study of human anatomy, and that cultural courses should be substituted for it.

Furthermore, in my own university, the plan of courses for three years of college work leading to a bachelor's degree on the completion of the first year of medicine, is so arranged that it is impossible for students to elect comparative anatomy and embryology. This plan was instituted two years ago, and has already resulted in a considerable reduction in the number of my students in comparative anatomy and embryology.

I heartily sympathize with the desire of the Association of American Medical Colleges to encourage a broader education for students who expect to make medicine their vocation. As a matter of fact, the realization that a cultural background is desirable for the highest type of attainment in the professions is not new. Sir Walter Scott, in *Guy Mannering*, put into the mouth of Mr. Pleydell these words: "These," speaking of his collection of the best authors and particularly of an admirable collection of the classics, "are my tools of trade. A lawyer without history or literature is a mechanic, a mere working mason; if he possesses some knowledge of these, he may venture to call himself an architect." It may, however, be inferred from the above that, even as early as 1829, there were lawyers who were mechanics rather than architects in spite of the "good old education" prevalent at that time. I furthermore suspect, that now, as then, it would be possible to expose a goodly portion of our college students to the discipline of Greek and Latin, and even to "a thorough course in Hegelian Philosophy in the original tongue," without the cultural aspects of these subjects ever penetrating beyond the cornified layer of the epidermis.

The subject of the bane of "Pre-" courses in preparation for the study of medicine has been so strongly brought to my attention of late, that I decided to make a critical analysis of the charges—at any rate, as far as they are concerned with the study of comparative anatomy. I, therefore, made a compilation of the grades of the class in human anatomy of the first year students in medicine at the University of Virginia for the fall term of the current school year. The results were as follows:

Students who had comparative anatomy at the University of Virginia			Students from the University of Virginia who had no comparative anatomy		
1's	7	33.33%	1's	0	0.00%
2's	11	52.35%	2's	2	16.67%
3's	2	9.53%	3's	5	41.66%
4's	1	4.76%	4's	5	41.67%
Students who had comparative anatomy at other institutions			Students from other institutions who had no comparative anatomy		
1's	4	19.05%	1's	0	0.00%
2's	5	23.84%	2's	2	20.00%
3's	9	42.84%	3's	5	50.00%
4's	3	14.27%	4's	3	30.00%
Both groups combined (entire class):			Those who did not have comparative anatomy		
Those who had comparative anatomy.			Those who did not have comparative anatomy		
1's	11	26.19%	1's	0	0.00%
2's	16	38.10%	2's	4	18.19%
3's	11	26.19%	3's	10	45.45%
4's	4	9.52%	4's	8	36.35%
	42	100.00%		22	100.00%

Note: The above tables do not include the grades of students who resigned before the end of the term.

The above figures appear to be significant in no small degree. It will be noted that of the 42 students who had comparative anatomy, 26.19 per cent received 1's and 9.52 per cent received 4's; while of the 22 students who did not have comparative anatomy, not one received a 1, while 36.35 per cent received 4's.

The relative success of the students who had comparative anatomy over those who did not, appears to be due to the fact that they had acquired a background which seems to be necessary in order to master the short but highly intensive course in human anatomy as offered in the medical school of the present day.

The higher degree of achievement of the students who had comparative anatomy at the University of Virginia over those who had it at other institutions is harder to explain. I strongly suspect, however, that it is due to difference in type, teaching and thoroughness of the courses offered at the various institutions from which these students came. For instance, five students, all of whom had comparative anatomy, were registered from one institution. Of these, 3 received 4's, 1 a 3, and 1 resigned before the end of the term. That there was no great difference in the native ability of the two groups, is indicated by the fact that there is little difference in the achievement of the students who did not have comparative anatomy at the University of Virginia as compared with those who did not have it elsewhere.

It has been suggested to me that only the better students take comparative anatomy, as it is considered to be a hard course. I cannot believe that this is so, as it is to be supposed that all medical students are selected largely on their success in science courses. Furthermore, I know personally several students of the group who did not take comparative anatomy who made exceptional grades in the college. Incidentally, one of these men came to me recently and expressed his regret that he had not taken comparative anatomy before entering the medical school.

If taught properly, comparative anatomy is a premedical course but not a preview course. When I say premedical, I mean premedical in the same sense as physics and chemistry are premedical courses, in that they prepare the medical student for the study of biochemistry and physiology. I feel that a course in comparative anatomy which is given as a preview of human anatomy is entirely undesirable. Such a course is usually nothing more or less than a poorly taught course in human anatomy, and fails entirely in grounding the student in the underlying principles of anatomy. Personally, I prefer to treat each form studied in the laboratory as an organism, the anatomical peculiarities of which show definite relationship to its environment and to its peculiar place in the evolutionary scale. There is nothing more interesting and instructive, for instance, than the study of the modifications of the visceral arches and their muscles to fit the environment of the organism, as exemplified in fish, amphibian and mammal, and, at the same time, to demonstrate that the basic plan of innervation remains the same in all three categories.

The average student who has not had previous sound instruction in comparative anatomy is severely handicapped in the study of human anatomy. He will, most probably, consider the cadaver which he must dissect an exceedingly repulsive hunk of flesh—it will have no further meaning for him; the regional plan of dissection now adds confusion, if not utter bewilderment, to the primary factor named above, as he has not had any previous conception of muscular, alimentary, vascular and urogenital systems, but must synthesize each of them by the study of parts of all at the same time; and, finally, his interest is not stimulated by the recognition of similarities and differences in structure of the human body as compared with those of the lower vertebrates. Even if, by the aid of a retentive memory and hard work, he is able to make a relatively good grade, his knowledge of anatomy would be most likely that of a "working mason" character, rather than the true enlightenment (digested and assimilated knowledge) of the "architect."

If culture is "the enlightenment and discipline acquired by mental and moral training," and it has been so defined, then the study of comparative anatomy must have some cultural as well as premedical value. This would apply, of course, to other premedical but not to preview courses.

Recent advances in medicine and the sciences related to medicine have resulted in such a crowding and intensification of the curriculum, that it appears logical to predict that "pre-" courses will become more and more necessary as time goes on, in order that the medical student be in a position to understand or even pass the courses offered him. No amount of study of the humanities will contribute materially to this end. The situation is an unfortunate one, but it must be recognized. It is not fair, for instance, to tell a prospective medical student that he should not study comparative anatomy, but that he should substitute such subjects as philosophy and other humanities in its place, when it is impossible for him to acquire a mastery of human anatomy, without a proper preparation for the intensive study of the subject that will be required of him in

the medical school. The only answer appears to be a longer and still longer period of preparation, which means a greater and still greater cost of medical education.

After all, no matter how many "cultural" and scientific subjects are studied—and I maintain the latter have cultural values—there will still be physicians who are "mechanics, working masons," and a select few who will be "architects." On the whole, this situation is fortunate. No great edifice can be built by working masons or architects alone. From the latter, the select few, will be drawn the research workers; from the majority of the former, the practicing physicians, who will apply the knowledge acquired by the select few.

An Experiment in Clinical Teaching

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Probably the greatest defect in the lecture system of clinical teaching is that the student does not develop any ability to obtain information. He may obtain a smattering of the subject but he does not learn how to project this learning process into future years. He learns facts when he should be taught how to learn. When the teacher is removed from the scene by graduation, many physicians cease to learn and do as well as they can with what they have. It has been pointed out that a very small proportion of physicians actually continue their studies after entering practice.

No doubt many reasons for this condition are to be found in our undergraduate teaching methods. A serious defect in our teaching is non-participation by the student in the educational process. During the preclinical years, this is taken care of by laboratory work done by the student. During the clinical years, it is also true that participation in ward rounds and small clinic groups meets this objection to some extent. However, it is probably true that most lecture courses do not stimulate the student to frequent the library to any great extent, and this is also frequently true of the clinics, demonstrations and ward rounds.

For some years, we have conducted trials of a method of student participation which succeeded well enough to encourage us to a complete year of a rather definite innovation in the teaching methods in the course in clinical neurology. From time to time, we have assigned symposia on selected subjects to groups of students, giving to each student a topic connected with the subject. On an assigned date, the students present to the class ten minute talks on their assigned subjects. As a rule, for the one hour period there would be four 10 minute talks and one 5 minute discussion, after which the clinician would sum up the subject in a general discussion, including criticism of the method of presentation and correction of any outstanding errors.

It was noted during the past two or three years that each of these periods stimulated the interest of the class in a way which was most encouraging and seemed to break into the monotony of the lectures very satisfactorily. During the past year it was carefully planned to have, instead of the usual lecture course, a series of these symposia presented by students. This was planned and put into effect during the fall of 1940 and the spring of 1941. The assignments were made many weeks in advance, giving the student time to prepare carefully the subject matter assigned to him and also to correlate this with the work of other

students who were to present talks on the same subject the same day. When the assignments were made, the students were instructed to use any source material available from textbooks and current journals and were encouraged in every way to use the library in the preparation of these ten minute talks. They were also instructed very definitely not to "read the paper" but to present this subject matter in the form of a short talk, using notes if they desired. This policy was adhered to throughout the year.

The following outline indicates the manner in which these assignments were made to students:

The lecture hours on October 1, 8, 15 and 22 were used by the clinician as formerly, in the discussion of interpretation of neurological signs and symptoms, relating these with the students' previous work in neuro-anatomy and physiology.

CLINICAL NEUROLOGY (Junior Class)

INFECTIONS OF THE NERVOUS SYSTEM

October 29—I. *Poliomyelitis*

(a) Etiology and Epidemiology (Adams)	(d) Treatment (Bailes)
(b) Pathology (Anderson)	(e) General Discussion (Bebb)
(c) Clinical Features (Ashby)	

November 5—II. *Meningitis*

(a) Bacteriology (Blackburn)	(d) Treatment (Brunazzi)
(b) Pathology (Bloss)	(e) General Discussion (Burrows)
(c) Course and Prognosis (Brown, H. M.)	

November 12—III. *Encephalitis*

(a) History (Cameron)	(d) Treatment and Management (Evans, H. L.)
(b) Pathology (Conally)	(e) General Discussion (Evans, R. W.)
(c) Clinical Features (Cox, E. R.)	

November 26—*Syphilis*

IV. Pathology and Pathogenesis

(a) Pathology and Pathogenesis of Blood Vessels (Fahring)	
(b) Pathology and Pathogenesis of Meninges (Gaddis)	
(c) Pathology and Pathogenesis of Parenchyma of Cord and Brain (Gailes)	
(d) Serology (George)	

December 3—V. *Clinical Features*

(a) Acute Luetic Meningitis (Goddard)	
(b) Chronic Basilar Meningitis (Golliday)	
(c) Cerebral Vascular Syphilis (Haley)	
(d) Miscellaneous Syndromes (Harkins)	

December 10—VI. *Clinical Features*

(a) Early paresis (Harmon)	(c) Tabes (Hodges)
(b) Late paresis (Harris)	(d) Tabo paresis (Hooks)

December 17—VII. *Treatment of Neurosyphilis*

(a) Chemotherapy (Huff)	(c) Fever therapy (Johnson, J. B.)
(b) Tryparsamide (Johnson, D. F.)	(d) Management of Patient in General.

OTHER NEUROLOGICAL DISEASES

January 23—*Multiple Sclerosis*

1. Gross Pathology (Kelly)
2. Microscopic (King)
3. Neurological Signs and Symptoms (Krueger)
4. Treatment measures and prognosis (Lamberth)

February 4—*Amyotrophic lateral sclerosis, progressive bulbar palsy, progressive spinal muscular atrophy.*

1. Pathology (Lovett)
2. Neurological signs and symptoms (Lumpkin)
3. Course and prognosis (Magers)
4. Treatment (Major, R. A.)

February 11—*Neurological Complications of Pernicious Anemia*

1. General Survey of Pernicious Anemia (Martin)
2. Neurological Pathology (Matthews)
3. Neurological Signs and Symptoms (Maxey)
4. Treatment Problems (McCall)

February 18—*Peripheral Neuritis*

1. Classification of Neuritides (McDaniel)
2. Clinical Features of Peripheral Neuritis (Mitchell)
3. Pathological considerations (Moore)
4. Treatment of Peripheral Neuritis (Newman)

February 25—*The Muscular Dystrophies*

1. Classification (Nicholson)
2. Chemical and Physiological considerations (Nobles)
3. Course and Prognosis (Ponder)
4. Treatment (Ramey)

March 4—*Syringomyelia*

1. Anatomical and Pathological Features (Randall)
2. Neurological Signs and Symptoms (Richman)
3. Course and Prognosis (Rogers)
4. Treatment (Shelton)

March 11—*Spinal Cord Tumors*

1. Classification (Smith)
2. Pathology (Starr)
3. Neurological Signs and Symptoms (Stovall)
4. Laboratory and Special Tests (Tate)

CIRCULATORY DISTURBANCES OF BRAIN

March 18—*General*

1. Anatomical Considerations (Tatum)
2. Review of Diseases affecting cerebral circulation (Tobolowsky)
3. Cerebral Anemia (Travis)
4. Cerebral edema (Tunnell)

March 25—*Cerebral Hemorrhage*

1. Pathology (Watkins)
2. Early or acute manifestations (Wilkinson)

3. Late Clinical manifestations (Williams)
4. Management and Treatment (Wilson)

April 1—*Cerebral Embolism and Thrombosis*

1. Pathology (Witte)
2. Early Clinical Manifestations (Yarbrough)
3. Late Clinical Manifestations (Yeager)
4. Management, Treatment, Prognosis (Yelderman)

April 8—*Meningeal Hemorrhage*

1. Pathology (Adams)
2. Signs and Symptoms (Anderson)
3. Course and Prognosis (Ashby)
4. Management, Treatment, Prognosis (Bailes)

April 15—*Craniocerebral Injuries*

Early

1. Physiological considerations (Bebb)
2. Pathology (Blackburn)
3. Clinical Features (Bloss)
4. Management (Brown)

April 22—*Late*

1. Pathology (Brunazzi)
2. Clinical Features (Burrows)
3. Course and Prognosis (Cameron)
4. Management (Conolly)

April 29—*Brain Tumors*

1. Classification (Cox, E. R.)
2. Gross Pathology (Evans, H. L.)
3. Microscopic pathology (Evans, R. W.)
4. Common Localizations (Fahring)

May 6—

1. Differential Diagnosis (Gaddis)
2. Special tests (Gailes)
3. Dangers and Risks in Management (George)
4. Life Expectancy in Brain Tumors (Goddard)

May 13—*Epilepsy*

1. History (Golladay)
2. Differences between Symptomatic and Idiopathic Epilepsy (Haley)
3. Medical Management of Idiopathic Epilepsy (Harkins)
4. The Electroencephalogram (Harmon)

NOTE: Certain additional periods were taken by the instructor during the year to fill out the discrepancies on the above outline.

It will be noted that the first assignments consisted of four 10 minute talks and one 5 minute general discussion, all by students. It was soon found that the 45 minutes thus consumed left too little time for the clinician; the president of the class and co-author of this paper, was quite careful to hold each student to his allotted time, but it continued to be obvious that more time was needed by the

clinician, hence the discussion by a student was eliminated entirely, thus giving the students 40 minutes, the clinician 20 minutes, of the one hour period. Further defects in this distribution of time will be noted below and have been included in the plans for next year.

The response on the part of the students was most gratifying. The morale of the class was maintained at a high level during the year. At no time during the year did any student fall down on an assignment. The symposia were conducted in a businesslike and serious manner, the president of the class acting as moderator. No student was allowed to exceed his time, and only on one or two occasions did a student fail to use his ten minutes fully. Laughs were not infrequent. Some students deliberately used humor to enliven their talks, and at other times the humor occurred as a natural result of the student's inexperience in public speaking. This was all taken with philosophical good humor by the class as a whole as well as by the speaker.

The students consulted freely with the instructor in regard to the assignments. These discussions at times were in the form of phone calls; these were rather frequent during the year and were welcomed by the instructor; such interest on the part of any previous class had not been noted. A critical discussion of this method of teaching is justified at this time, since we feel that our experiences during the year have brought out many interesting observations, both favorable and adverse.

There was a definite tendency for the talks to become somewhat textbookish in character. Occasionally a student would show evidence of having done much reading; in some instances the current literature was referred to freely.

The quality of the talks on the fundamental science phase of each subject was much more valuable as a rule; due probably to the almost complete inexperience of the student with the clinical aspects of the assigned subjects. This will be referred to below in the conclusions and in the plans for the following year.

Throughout the year, the comments of the students were given careful attention and near the end of the course a questionnaire was given to each student. The general trend of student opinion was to the effect that they missed very definitely the clinical experience of the instructor and all seemed to feel that this constituted a serious defect in the method. This will be referred to in the altered plan for the coming year.

During the year, the students used the blackboard freely; pathological material was brought to class and used in demonstration on numerous occasions.

Further evaluation of our experience during the past year reveals a number of interesting and favorable reactions over previous years.

1. The desire on the part of the student to "show up well" before his class makes it a most potent stimulus for study.
2. The old axiom that the teacher learns more than the student is here used to the fullest extent.

3. The experience in public speaking is not to be ignored in the personality development of future physicians, who cannot be said to excel in this art.

4. A sympathetic relationship between teacher and student is maintained. This is a better psychological setting for the learning process than the old "spoon-fed" attitude so often seen in third year students.

Plans for the coming year include the correction of a number of obvious errors in the present plan.

1. The assignments to students for the coming year will be made on the basic science aspect of each subject, not in the clinical aspects.

2. Only two 10 minute talks for each period will be given by students. For this the student is well prepared and has had adequate experience. The remainder of the hour will be used by the clinician for discussion of the clinical aspects of the subject.

3. Further use of demonstration material, as well as lantern slides and movies, is being planned at this time, both for the use of student lecturers as well as the clinician.

4. The first three or four periods will be used by the instructor for orientation, this consisting largely of the discussion of neurological signs and symptoms from an interpretative standpoint. This was used as an introduction to the course this year and is deemed of vital importance and not to be abandoned.

5. Actual clinical demonstrations are not used because of the size of the class (about 70 students). The clinical application of the material of this course is done at other periods and in smaller groups, as outlined in the catalogue of this school.

CONCLUSIONS

1. A method of clinical teaching is proposed in which student participation, in the form of assigned symposia, given by the students, is used throughout the year.

2. This method has been used during the years 1940-41 with sufficient success to warrant continued use, with certain modifications, during the coming year.

3. The interest and morale of the class was maintained at a high level during the application of this experimental method.

4. The assignment of clinical subjects to students will be abandoned during the coming year, but participation by the students in the form of ten minute talks on the basic science phases of each subject will be retained.

5. Discussion of symptomatology, diagnosis, course, prognosis, management and treatment will be resumed by the clinician, largely as the result of student opinion obtained by questionnaire.

Is There a Need for a Certification Program for the Medical Library Profession?

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It is only after a great deal of hesitancy, and much thought, that I decided to present this question to the medical library profession for any comment or consideration it may merit, namely, "Is there a need for a certification program for the medical library profession?"

It need hardly be said that any one who has gone through an accredited library school, has become acutely conscious of "standards," the part they have played in developing libraries, including the proper training of library personnel, and the gradual recognition of librarianship as a profession, with distinct qualifications and training. There is little need for any comment on what the adoption of school library standards by the Southern Association of Colleges and Secondary Schools has meant to school libraries in the South. Twelve years ago there were no school libraries worthy of the name of library in the state of Louisiana, and only one or two librarians with any training, but today, with the adoption and enforcement of the Southern Association standards, all that is changed; every school has an adequate library and, what is equally important, the library is directed by a properly trained librarian.

What is true for school libraries is also true for other types of libraries. The libraries of our colleges and universities are all staffed by trained librarians, with the resulting tremendous development and improvement. Public libraries early saw the need of a certification program, and today most of the states have inaugurated such a program for the certification of those holding positions as public librarians. Speaking from the experience of observing the effects of the certification program for public librarianship in Louisiana, there is no doubt in my mind that it has resulted in a very high type of personnel being admitted to executive positions in the public library field.

On assuming the position of librarian of the Louisiana State University School of Medicine, I felt it was necessary to evaluate the library's holdings in order to formulate some policy for its future development. Beyond the rather general statements included in the standards for accredited medical schools, as drawn up by the Council on Medical Education and Hospitals of the American Medical Association and published in the *Directory of the American Medical Association*, there was little that could be used as criteria in this respect.

Sometime later, I became interested in finding out what type of training the majority of the medical librarians had had in order to qualify themselves for this special type of work, particularly since the Council on Medical Education and Hospitals of the American Medical Association states that a trained librarian should be in charge of the library. So far as could be ascertained the positions

were held by individuals with varying qualifications, such as M.D.'s., Ph.D.'s., M.A.'s., B.A.'s., including those with professional degrees from library schools and those without a degree.

A distinctly forward step for drawing up standards for medical school libraries is contained in the report by H. G. Weiskotten, A. M. Schwitalla, W. D. Cutter and H. H. Anderson on "Medical Education in the United States, 1934-1939." From this report, by comparing your library's physical equipment, holdings, financial support and use with other libraries and particularly with those of the highest ranking medical schools, you are able to form some idea what an adequate medical school library should have. However, there was very little said concerning the qualifications or training of medical librarians. It did point out that in only one-half of the medical schools were the libraries in charge of a librarian holding a bachelor's degree, and the significant fact is that in twenty-six of these schools, instruction in medical bibliography was given by the librarian.

Every one in the medical library profession is familiar with the long drawn out fight for the proper training of those who wish to practice medicine by the creation of standards for medical schools, and by the examination of candidates before properly qualified state examining boards. More recently the medical profession has further elevated its standards by adopting qualifications for those desiring to practice a specialty, requiring them to meet the standards as drawn up by a specialty board.

Whether there is a need in the medical library profession for a certification program is for the members to decide. Whether the profession is adapted to the setting up of certain standards by which members could better qualify themselves for their work by meeting these standards, as drawn up and administered by a certification board, either appointed or sponsored by the Medical Library Association, is a question that at least can be considered in the light of the experiences of the two closely allied fields of which the medical library profession is a part; that is, the library profession itself and the medical profession.

What these standards should be, I am unable to suggest at present, but it does seem as if a profession as specialized as the medical library profession is should have some common denominators which would be applicable in drawing up a set of standards for the certification of medical librarians.

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Student Recommendations

It is the practice of many medical colleges to require every applicant for admission—whose acceptance is likely—to file two or more letters of recommendation written by former science teachers in the arts college he attended. How much value is placed on these letters cannot be ascertained without making inquiry of all medical colleges. The practice is an old one. When first initiated these letters carried considerable weight in determining selection or rejection. Is that true today? Some arts colleges claim it is not because applicants are accepted in spite of a recommendation which calls for rejection.

Every year, at the end of the academic year in medical college, The Association of American Medical Colleges reports to the arts college on the accomplishment of their students in all medical colleges. It is not uncommon to receive word from a college that a certain student or students who have made a poor record in the medical college were definitely not recommended for acceptance. And, the arts college authorities feel that they should not, therefore, be charged with a failure.

Every medical college receives a full report on the accomplishment of every freshman student of every arts college represented in that student body. These reports are used in determining acceptance or rejection of applicants from these colleges. If the showing made by the students of a certain arts college has been poor, over a period of one or more years, there must be some hesitation over accepting applicants from that college. Then, there is the normal pride of accomplishment possessed by every arts college. The colleges are concerned with the accomplishment of their students in medical college. True, the question may

be asked, "Why do these colleges graduate students whose work cannot be recommended; and, why permit such a student to continue his work in college if he makes application to a medical college during his third year in college? Why do professors make recommendations when the student's work does not warrant such action?"

It would seem that the problem could be solved if the personal element were removed from recommendations. The arts college could, no doubt, appoint a committee whose duty would be to make a true report on the scholastic standing of the students. This would place the stamp of official authority on the recommendation, pro or con, and remove every feeling of personal obligation or charity from recommendations. Medical colleges could place full dependence on them and make good use of them in deciding for or against acceptance of an applicant. Furthermore, if an applicant who was not recommended is accepted by a medical college and he fails in his work, the failure could not be charged to the college. The onus would rest on the medical college.

Much more could be said on this matter by going further back to the arts college and its acceptance of students—but the immediate problem concerns only the acceptance of applicants for admission to a medical college on the basis, in whole or in part, of recommendations made by the arts college or members of its faculty acting as individuals. Arts colleges will do well to consider this plan.

* * *

Internships: Supply and Demand

Three years ago the Association of American Medical Colleges appointed a committee whose duty was to be to at-

tempt to bring order out of the chaos which surrounds the internship. A careful study was made of the place of the internship in the educational program of the medico to be. A committee reported its conclusions and these were published as information for those who desired to have it. The first named committee, after consultation with deans of medical colleges and directors of hospitals decided to begin its work by attempting to secure a uniform date on which hospitals would make announcement of their choice of interns. It was believed that this plan would go far to overcome anxiety on the part of the medical student and give the hospital opportunity to secure its quota of interns.

All hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association were asked to cooperate, if they could and would, in carrying out this plan. The replies were most satisfactory. About 85 per cent of approved hospitals agreed to cooperate. Many of them welcomed the plan. But the outcome was an entirely different one. Complaints have been made by hospitals that other hospitals, said to be the larger hospitals, probably more attractive to the prospective intern, "jumped the gun" by making announcement of appointments much earlier than the date agreed upon—November 15th. Of course, the disparity between supply and demand is responsible for this failure to live up to the agreement. The following extract from an editorial appearing in the *New England Journal of Medicine* (October 2, p. 554) portrays the situation well.

"The hospitals of the United States are now engaged in a new type of competition—a competition for their rightful share of the limited supply of available interns.

"Among the hospitals in certain metropolitan areas, regulatory procedures have been in operation for many years. So far as they concerned those areas and so far as they did not involve the fourth-year medical students in too many

schools, these regulations worked well; but when one metropolitan area advanced the date of its examinations and stipulated that the students selected must immediately accept the appointments or refuse them forthwith, the next year another area was sure to advance the date again. Last year, it was generally agreed that appointments would not be made before a certain day in November, but many hospitals jumped the date when it seemed to be advantageous for them to do so. This year, at least one hospital has written to some of the medical schools asking for the names and addresses of all students in the upper third of the graduating classes—offering to pay the schools for the compilation of such a list—so that they might circulate these men and perhaps inveigle them in advance of other opportunities or commitments. The competition is becoming keen, and for the fourth-year medical student to be competed for rather than to be in competition is a refreshing situation. He who is being competed for, however, must be wary. He should develop sales-resistance, for he will inevitably be approached, proselyted and attracted by whatever devices hospitals can legitimately employ to secure their share of intern attention and service and the institutions that talk the loudest should bear particular scrutiny.

"Even the medical schools could increase their output and thus satisfy the demands for intern service—which at the present time they cannot do without lowering the standards of medical education—this merely means that a serious oversupply of practicing physicians would eventually occur, since the very increases in the utilization of hospitals that have brought about the present disproportions have already diminished the practice of domiciliary medicine. Economic laws seem to point toward an arrangement whereby those hospitals that do not or cannot provide bona fide educational privileges to their interns would hire graduate interns as resident physicians, thus adding to the cost of medical care but, on the other hand, staking the fledgling physician to the

price of an automobile and his first month's rent or the wherewithal with which to pay his debts when he eventually begins private practice."

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The Richmond Meeting

The fifty-second annual meeting of the Association of American Medical Colleges, held in Richmond, Virginia, October 27-29, 1941, was an outstanding success. The local arrangements were perfect. The committee did not overlook anything which could help to make the visitors comfortable, entertained and interested. To this group all credit is due.

The attendance was unusually good. Only six member colleges were not represented by one or more delegates. They are: University of Oregon; University of Rochester; University of Southern California; University of the Philippines; Queen's University and University of Manitoba.

The seventy-nine colleges were represented by 142 delegates. Many colleges sent as many as three and four representatives which may be accepted as evidence of increased interest and a keen desire to participate in the deliberations and actions of the Association.

The program was good and was well received. Most of the discussion, however, centered around selective service and medical student and intern deferment. Through the efforts of the Association's Committee on Preparedness, of which Dr. W. C. Rappleye is chairman—and his work represents almost entirely the accomplishments of this committee—Selective Service graciously cooperated in setting up satisfactory arrangements. It is now up to the students and interns and the administrative officers of the medical schools to do their part in working out the program of Selective Service to its satisfaction. And it can be done. As a matter of fact, it must be done—and it will be done.

One resolution bearing directly on this question, which was adopted, is the following: "The Executive Council recommends that it be the policy of the Association of American Medical Col-

leges to urge third and fourth year medical students who are under the jurisdiction of Selective Service to apply for a commission as second lieutenant in the Medical Administrative Reserve Corps of the Army or as Provisional Ensign in the Medical Reserve Corps of the Navy, and that no further recommendations for deferment of military service be made by the member colleges of the Association for junior and senior medical students who are eligible for such commissions."

A number of important committees were appointed to consider questions of policy, administration and practice. The Association appointed a representative in each U. S. Army Corps Area to act as a consultant or councillor for the Corps Area Surgeon in Selective Service Matters. The American Hospital Association and the American Medical Association have also each appointed a representative for each area. Thus each Corps Area Surgeon will have at his command for assistance three men—representing the medical schools, the hospitals and the medical profession. This arrangement should insure perfect cooperation in adjudicating questions connected with selective service, medical students and interns.

All papers read at the meeting and the discussions thereon will be published in full in the *JOURNAL*.

Dr. Loren R. Chandler, dean of Stanford University School of Medicine, assumed the presidency. Officers elected were: President-elect: Dr. W. S. Leathers, dean, Vanderbilt University School of Medicine; vice president: Dr. E. M. MacEwen, dean, State University of Iowa College of Medicine; secretary, Dr. Fred C. Zapffe, Chicago; treasurer: Dr. A. C. Bachmeyer, Associate dean, University of Chicago Medical School. Members of Executive Council: Dr. Russell H. Oppenheimer, dean, Emory University School of Medicine, and Dr. Maurice H. Rees, dean, University of Colorado School of Medicine.

Louisville, Kentucky, was chosen as the place of meeting in 1942. Time: October 26, 27 and 28.

College News

Tulane University School of Medicine

Federal funds will aid to carry on research in malaria control and for the study of roentgen therapy of gas gangrene.

The Department of Graduate Medicine will give a course in tropical medicine and medical parasitology to extend through the first half of the year. Properly qualified physicians of the United States and Latin America are eligible to take this course.

Dr. William A. Sodeman has been appointed professor and head of the department of preventive medicine succeeding Dr. Wm. H. Perkins, who is now dean of Jefferson Medical College. Expansion of the department, made possible through a grant from the Commonwealth Fund, has been planned for this year. Students will be brought into direct contact with patients to study the development of disease. Closer cooperation with public health agencies and citizen groups interested in health is also being arranged.

Dr. Ralph Heinrich Heeren has been appointed associate professor of preventive medicine. Dr. Heeren was formerly assistant professor of hygiene and preventive medicine and chief of the division of communicable disease in the department of health of the State University of Iowa college of medicine.

Dr. Elliston Farrell, former assistant clinical professor of medicine at the Long Island College of Medicine, has been named assistant professor of tropical medicine. Dr. Farrell has done extensive work in the Province of Assam, India, and in Nanking, China.

Dr. Harry A. Senekjie, former assistant professor of bacteriology and parasitology at the Royal College of Medicine, Baghdad, Iraq, and director of the Institute of Bacteriology and Pasteur Institute of Vaccines in Bagh-

dad, has been named instructor in tropical medicine.

Adrian C. Kuyper, Ph.D., former instructor in physiological chemistry at Ohio State University, has been named assistant professor of biochemistry.

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Louisiana State University School of Medicine

New appointments: Mr. Edwin Byer, assistant in physiology; Dr. John S. LaDue, instructor in medicine; Dr. Wallace Sako, instructor in pediatrics; Dr. George R. Meneely, instructor in medicine; Dr. John Skogland, assistant professor of neuropsychiatry.

Dr. William F. Alexander and Dr. E. Morton Bradley, instructors in anatomy, resigned to accept assistant professorships at the University of Georgia School of Medicine. Dr. John L. Keeley, assistant professor in the department of surgery, resigned to enter practice. Dr. Merrill W. Everhart, instructor in pediatrics, has been granted a leave of absence, having been called to active duty as Captain in the Medical Reserve Corps of the Army. Dr. Everhart has been assigned as Chief Medical Officer of the Port of Embarkation in New Orleans.

Dr. Rigney D'Aunoy, who was connected with the school since its foundation as professor and head of the department of pathology, secretary of the faculty and dean, until 1939, died recently. Dr. D'Aunoy was very active also in the planning and construction of the new charity hospital.

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Bowman Gray School of Medicine Of Wake Forest College

The College has received a gift of a group of three buildings from Mrs. Benjamin F. Bernard, to be known as the Bowman Gray Institute for Medical Research. The Institute will be used

for postgraduate research and clinical investigation and will continue the pre-clinical work of the School of Medicine.

It has been decided that the research divisions of the department of internal medicine, under the direction of Dr. Tinsley Harrison, professor of medicine and head of the department of surgery, Dr. Howard H. Bradshaw, professor of surgery and head of the department, and the department of medical genetics, Dr. William G. Allan, head and professor, will be developed first. Research activities now under way in the medical school will be transferred to the Institute as soon as remodeling of the buildings is completed.

The staff of five in the research division of the department of internal medicine, who are now engaged in research on the problem of cause and treatment of hypertension, will be among the first to remove their work from the medical school to the new institute.

In addition to laboratories, the medical institute as now planned will include offices for the staff, quarters for the animals to be used in the research experiments, conference rooms, and a reference library which will be branch of the medical school library.

The first session of the School was opened on September 11th with freshmen and sophomore classes only. Juniors will be taken on in 1942. All classes will be limited to 50 students.

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University of Colorado School of Medicine

Dr. Ivan C. Hall resigned as professor of bacteriology and Head of the Department, and Dr. Casper F. Hegner resigned as professor of surgery and Head of the Department.

Dr. Richard Thompson (M.D. U. of Oregon, 1924), has been appointed professor of bacteriology and Head of the Department. Dr. Thompson comes to Colorado from the College of Physicians and Surgeons of Columbia University where he was Associate Professor of Bacteriology.

Dr. George B. Packard, Jr., (M.D. Harvard Medical School 1914), has been appointed Acting Head of the Department of Surgery. He has been on the faculty since 1919.

Promotions: John W. Amesse, professor of clinical pediatrics; George P. Lingenfelter, professor of dermatology and syphilology; Severance Burrage, associate professor of bacteriology, emeritus; John M. Barney, John G. Ryan, and Lorenz W. Frank, associate professor of medicine; Harold L. Hickey, associate professor of otolaryngology; Glaister H. Ashley, assistant professor of neurology; H. Dumont Clark, Henry L. Cooper, Ward Darley and Edgar Durbin, assistant professor of medicine; Jack R. Ewalt, assistant professor of psychiatry; Richard M. Mulligan, assistant professor of pathology; William W. Jones, John A. Schoonover and Louis C. Wollenweber, assistant professor of pediatrics.

The School of Medicine opened its 1941-42 session on September 29th, with the following enrollment: Senior class 51; junior class 50; sophomore class 53; and freshman class 60.

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University of California Medical School

The Medical School will offer a refresher course, "Clinical Aspects of New Therapy," January 5, 6 and 7, 1942. The course, which will be intensive and designed to meet the need of physicians in practice, will include the following subjects: Sulfonamide Drugs; Drugs Used on Central Nervous System; Organotherapy and drugs used in treatment of Diseases of the Adrenal; New Drugs acting on the Heart and Circulation and Clinical Aspects of Nutrition. Members of the faculty will participate. Complete and detailed programs will be obtainable at the Dean's Office of the Medical School.

Dr. Karl M. Bowman, director of the division of psychiatry, Bellevue Hospital, and professor of psychiatry at New York University College of Medicine,

New York, has been appointed to direct the new Langley Porter Clinic, a neuro-psychiatric unit of the state department of institutions, under the direction of the Medical School. He will begin his new work at the clinic about November 1. The new \$500,000 building is not expected to be completed by that time, but Dr. Bowman will begin the selection of personnel and arrange other organizational detail. The cornerstone for the new clinic was laid, April 5. The building is situated on the campus of the medical school and is named in honor of Dr. Langley Porter, dean emeritus and professor of medicine and lecturer in medical history and bibliography, emeritus, of the medical school. Dr. Bowman will be employed partly by the University of California in the capacity of head of the department of psychiatry there and partly by the department of institutions in the capacity of medical superintendent of the Langley Porter Clinic.

Dr. C. E. A. Winslow, professor of public health, Yale University, is Rosenberg Professor in the Public Social Services at the University of California during the fall semester of 1941. Dr. Winslow gave two talks to the faculty and senior students at the Medical School, one on "Modern Public Health Programs" and the other on "Medical Care in Modern Society."

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Long Island College of Medicine

On account of illness, Dr. Frank L. Babbott has resigned from the presidency of the College and has accepted the chairmanship of the Committee on Education of the Board of Trustees. Dean Curran is acting president.

The following members of the Executive Faculty retired and have been appointed emeritus professors: Dr. Alfred E. Shipley, Preventive Medicine and Community Health; Dr. O. Paul Humpstone, Clinical Obstetrics and Gynecology, and Dr. Simon R. Blatteis, Clinical Medicine.

Promotions: Dr. Fred L. Moore, professor of preventive medicine and

community health; Dr. Ralph M. Beach, professor of clinical obstetrics and gynecology; Dr. Louis C. Johnson, clinical professor of medicine; Dr. Milton B. Handelsman, Dr. Milton Plotz, Dr. Charles G. Williamson, Dr. Burton L. Zohman, assistant clinical professors of medicine; Dr. William H. Field, Dr. D. Dexter Davis, assistant clinical professors of surgery.

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Wayne University College of Medicine

Thirty-one courses will be available this year through the Continuation School of Wayne County.

The Continuation School is sponsored by the Wayne County Medical Society, the Wayne University College of Medicine, the Hospitals of Wayne County, and the Detroit Department of Health to further post-graduate study opportunities. Prof. Ralph H. Pino and Associate Dean W. J. Stapleton of the College are, respectively, chairman and registrar of the School.

A course in "Applied Anatomy," consisting in lectures and laboratory work will meet at the College, with Wayne faculty members in charge. Other members of the College faculty will cooperate in teaching the 29 courses offered at the hospitals. The hospital work will include beside examinations as well as lectures and class demonstrations. Nine courses will meet at the William J. Seymour Hospital, in Eloise; seven at Grace Hospital; six at Receiving; four at Harper; and one each at Henry Ford, Highland Park General, and Mt. Carmel Mercy.

Two courses in pathology for practicing physicians of the metropolitan area will be offered this semester.

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Yale University School of Medicine

Edgar Allen, Ph.D., professor and chairman of the department of anatomy has been awarded the Baly Medal of the Royal College of Physicians, London, in recognition of his work on estrogens.

*Woman's Medical College
of Pennsylvania*

Promotions: Dr. E. J. G. Beardsley, professor and head of the department of medicine; Dr. Clara L. Davis, Dr. Mary H. Easby, and Dr. Katherine Elsome, clinical assistant professor; Dr. Eleanor Valentine, clinical instructor and director of clinical laboratory; Dr. John Paul North, clinical professor of surgery; Dr. Phillis Bott, associate professor of physiological chemistry; Dr. Eula Eno, associate professor of obstetrics; Dr. Benjamin Tertius Bell, Professor and Head of Department of Orthopedics; Dr. J. Hamilton Allan, clinical assistant professor; Dr. Frank Clarke, clinical assistant professor of roentgenology.

New Departments of Anaesthesia, Gastro-enterology and Urology have been established under the following professors: Dr. Julia H. Hardin, professor of anaesthesia; Dr. Mary M. Spears, professor of gastro-enterology proctology; Dr. Faith Fetterman, professor of urology. Dr. Carmen Thomas has been promoted to be professor and Head of the Department of Dermatology. Dr. Elizabeth Kirk Rose is giving a series of five lectures for fourth year students on Marriage Counseling, in conjunction with the Philadelphia Marriage Counsel.

The Hospital of the Woman's Medical College has been reorganized with Dr. Eulo Eno as Medical Director, and a new system of residencies, offering graduate work in Medicine and Pediatrics, Surgery, and Gynecology. There has also been appointed a new faculty in the School of Nursing under the director of Miss Doretta C. Thielker, who is a graduate of Barnard College and of the Yale School of Nursing. The School of Nursing has become academically an integral part of the College. A new nurses' home has been provided for the students and graduate nursing staff and the faculty of the School of Nursing.

The Associated Hospital Service of Philadelphia has started an innovation in allowing the students to become mem-

bers during the academic year. The Woman's Medical College is the first to take advantage of this and is covering all medical students for hospital care.

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*University of Oklahoma
School of Medicine*

Miss Elizabeth R. Hall, M.S., has been appointed instructor in bacteriology, succeeding Mrs. Ida L. B. Wallace, who resigned. Miss Hall formerly was connected with the University of Michigan Health Service.

Dr. Paul E. Smith, assistant professor of physiology in the University of Tennessee College of Medicine, has been appointed instructor in pharmacology, succeeding Dr. Benedict E. Abreu who resigned.

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Meharry Medical College

Dr. J. S. Chandler has been appointed director of the Syphilis Clinic and instructor in syphilology. Dr. V. M. Cambridge has been appointed as assistant in the Syphilis Clinic and instructor in syphilology. This adjustment has been made to fill the vacancy left by the resignation of Dr. W. A. Mason who has received an appointment at Ft. Valley, Ga. The didactic course in syphilis for the senior students will be conducted by Dr. Rudolph Kampmeier and his staff of Vanderbilt University.

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*University of North Carolina
School of Medicine*

Dr. William deB. MacNider, Kenan research professor of pharmacology, delivered three lectures on "Acquired Resistance of Tissue Cells," under the auspices of the department of materia medica and therapeutics of the University of Michigan Medical School. The subjects of his lectures were "Repair of Tissue and Tissue Resistance," "The Aging Process and Tissue Resistance" and "The Adjustability of the Life Process to Injurious Agents."

In order to better correlate the various medical activities at the University

a new Division of Medical Sciences has been established. This Division is composed of the School of Medicine, the Public Health School, the Tri-County Health Department and the University Health Service. Dr. W. R. Berryhill was appointed Dean of the School of Medicine and Chairman of the new Division.

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*Boston University
School of Medicine*

Hospitalization service will be offered to students of the school of medicine throughout the present academic year for a \$5 fee or a donation to the Blood Bank. Enrollment this year is one of the largest in the history of the school. The Samuel Gold Award, presented annually to the school's outstanding freshman by Phi Lambda Kappa fraternity, had been given to Sarkis A. Sarkisian, Bridgewater.

Under the hospitalization plan, University medical students will receive complete medical care during the school year. The program has been developed under a new agreement, now going into effect with the Massachusetts Memorial Hospital, to aid medical students needing hospital care throughout the academic term.

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*Stanford University
School of Medicine*

The twenty-eighth course of Lane Medical Lectures was delivered by Dr. Cecil K. Drinker, Professor of Physiology and Dean of the School of Public Health, Harvard University, October 6, 10, 13, 17 and 20, 1941. His subject was: The Lymphatic System: Physiological and Clinical Considerations. Lecture I: Physiological Principles Displayed in the Evolution of the Mammalian Circulation. Lecture II: The Blood Capillaries of Mammals. Lecture III: The Appearance and Elaboration of the Lymphatic Vessels. Lecture IV: The Blood, the Tissue Fluid and the Lymph as Illustrated by Certain Experi-

ments upon the Heart and Other Organs. Lecture V: Some Lessons for Medicine and Surgery. These lectures are open to the medical profession, students, teachers, research workers in medicine and allied sciences.

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Jefferson Medical College

Dr. William Harvey Perkins, professor of preventive medicine, Tulane University of Louisiana School of Medicine, New Orleans, has been appointed dean succeeding the late Dr. Henry K. Mohler. Dr. Perkins was born in Philadelphia in 1894 and graduated at Jefferson Medical College in 1917. He was a member of the American Presbyterian Mission in Siam from 1919 to 1923, a Rockefeller Foundation fellow from 1925 to 1926 and visiting professor of medicine, Chulalongkarana University, Bangkok, Siam, from 1926 to 1930, when he joined Tulane as instructor. He became professor of preventive medicine in 1932.

The 117th Annual Session was inaugurated September 17, 1941. Mr. Robert P. Hooper, President of the Board of Trustees, presided. The Introductory Lecture was delivered by Dr. Martin E. Rehfuss, Professor of Clinical Medicine, on "The Medical Student of Today."

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*University of Minnesota
Mayo Foundation*

A series of lectures, demonstrations and clinics by members of the faculty and invited guests will be held during the week of November 10th. Problems related to medical and surgical emergencies encountered in civilian and military practice will be emphasized. Physicians are invited to attend.

Prof. Adolf Magnus-Levy, formerly of Berlin and now at Yale University, gave a Foundation lecture October 16. His subject was "Multiple myeloma—a threefold trouble of protein metabolism."

Dr. Allen O. Whipple, Valentine Mott Professor of Surgery, Columbia University College of Physicians and Surgeons, gave a Foundation lecture, October 23. His subject was "Experimental data in the study of the pathogenesis of certain of the splenopathies."

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*University of Nebraska
College of Medicine*

Dr. Charles W. M. Poynter, dean and also professor and chairman of the department of anatomy, has been relieved of his duties as chairman. John S. Latta, Ph.D., professor of anatomy and secretary of the department, has been made chairman.

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*Loyola University
School of Medicine*

Dr. Harry A. Oberhelman has been appointed to succeed Dr. L. D. Moorhead as professor and head of the department of surgery. Dr. Oberhelman was associate clinical professor of surgery at Rush Medical College from which he graduated in 1920. He was also for many years director of the Arthur Dean Bevan Laboratory of Surgical Pathology at Rush.

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*University of Arkansas
School of Medicine*

Fifty milligrams of radium have been purchased for use in the Tumor Clinic of the University Hospital. The Elsie A. Lake Foundation gave \$600; the State Hospital for Nervous Diseases and the medical school each contributed \$600.

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*University of Tennessee
College of Medicine*

August Hermsmeier Wittenborg, chief of the division of anatomy, histology and embryology and professor of anatomy, died, August 21, of myocardial infarction.

*University of Buffalo
School of Medicine*

Dr. John D. Stewart, associate in surgery, Harvard Medical School has been appointed professor of surgery and surgeon in chief at the Edward J. Meyer Memorial Hospital, Buffalo.

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*McGill University
Faculty of Medicine*

Drs. Fraser B. Gurd, Charles P. K. Henry and F. E. McKenty have been promoted from associate to full professors of surgery.

Professor J. B. Collip will head the newly formed Research Institute of Endocrinology. He has resigned his professorship in biochemistry. Dr. D. Landsborough Thomson has been appointed Dr. Collip's successor.

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*Indiana University
School of Medicine*

Paul M. Harmon, Ph.D., who has been connected with the School of Medicine for the past twenty-six years, has been named chairman of the department of physiology, succeeding William J. Moenhaus, Ph.D., who retired at the end of the past school year. Dr. Khalil G. Wakim, who has been teaching at the Mayo Clinic, Rochester, Minn., for the last year, has been appointed associate professor of physiology.

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*State University of Iowa
College of Medicine*

Dr. Andrew H. Woods, since 1928 medical director of the psychopathic hospital and professor and head of the department of psychiatry, has retired, having reached the official retirement age.

Dr. Ralph H. Heeren has resigned as assistant professor of hygiene and preventive medicine to accept a similar position at the Tulane University of Louisiana School of Medicine, New Orleans.

*Duke University
School of Medicine*

At the beginning of the autumn quarter, there were 262 medical students, 76 first year, 62 second year, and 124 juniors and seniors.

From October 16th-18th the Annual Post-Graduate Symposium on Problems of Civil and Military Emergencies was held, in which the following participated: Dr. George J. Heuer, of Cornell Medical College; Dr. John Scudder, of the College of Physicians and Surgeons, Columbia University; Dr. J. E. M. Thomson, Lincoln, Nebraska; Dr. Harry Stack Sullivan, of the Washington School of Psychiatry; Dr. Alfred R. Shands, Medical Director of the Alfred I. duPont Institute of the Nemours Foundation, Wilmington, Del.; Dr. John F. Fulton, of Yale University; Dr. Philip D. Wilson, of Columbia University; Dr. Frank D. Dickson, of the University of Kansas; Dr. Wilder G. Penfield, Director of the Montreal Neurological Institute; Dr. T. T. Mackie, of the College of Physicians and Surgeons, Columbia University; Dr. Alvan L. Barach, Columbia College of Physicians and Surgeons; Dr. George E. Bennett of The Johns Hopkins University; Dr. John M. Converse, Plastic Surgeon at the American Hospital in Britain; Captain Charles S. Stephenson, of the U. S. Naval Medical School; Dr. Russell L. Cecil, of Cornell University Medical School.

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*University of Oregon
Medical School*

Dr. Warren C. Hunter, since 1935 associate professor of pathology, has been promoted to a full professorship.

*University of Georgia
School of Medicine*

The John and Mary R. Markle Foundation granted \$5,000 to supplement a previous gift of \$6,000 made last year for research on nutritional diseases under the direction of Dr. V. P. Sydenstricker.

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*University of South Dakota
School of Medical Sciences*

The International Cancer Research Foundation has made a grant of \$800 to Dr. H. Douglas McEwen, assistant professor of biochemistry, for studies in the biochemistry of tumor bearing animals.

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*University of Michigan
Medical School*

Dr. Henry Field, Jr., has been promoted from associate professor to professor of medicine.

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Harvard Medical School

Dr. Derek E. Denny-Brown, London, has taken up his duties as professor of neurology and director of the neurologic unit at the Boston City Hospital.

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*University of Toronto
Faculty of Medicine*

Dr. Angus Campbell has been appointed professor of otolaryngology to succeed Dr. Geo. M. Biggs, deceased.

General News

Children's Bureau Needs Maternal and Child Health Specialists

Employment registers are to be established by the United States Civil Service Commission to fill maternal and child health specialist positions in the Children's Bureau of the Department of Labor. Vacancies in similar positions in State agencies cooperating with the Children's Bureau may also be filled from these registers at the request of the States concerned. The examination announcement just issued by the Civil Service Commission to recruit persons for these positions allows the filing of applications until November 15, 1941.

There are three options in which persons may qualify—pediatrics, obstetrics and orthopedics. For each of these options employment lists will be established for administrative, research, and clinical positions. The duties of the administrative positions include giving consultations and advisory service to State and other Government agencies carrying out maternal and child health programs. The research positions involve the planning or directing of studies in such fields as infant and maternal mortality, and child growth in relation to social, economic, and other factors. Persons appointed to clinical positions will do clinical work in one of the options.

A written test will not be given for these positions. Competitors will be rated on their education, experience and corroborative evidence. Applicants must have graduated from a medical school of recognized standing with an M.D. degree and must have served a one-year internship. In addition they must have had full-time post-internship clinical training as well as other appropriate experience in the option selected and in the type of work in which they seek appointment.

Doctors of Medicine who are interested in this opportunity for Government employment are urged to seek

further information about these positions which pay from \$3,200 to \$5,600 a year. Further information and application forms may be obtained from the Commission's representative at any first or second class post office or from the central office in Washington, D. C.

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Well Baby Program in California

The University of California Medical School, San Francisco, and the state department of health are cooperating in the expansion of child health work in the state. A step in the plan was the appointment of Dr. Sydney Sinclair, formerly instructor in pediatrics, Yale University School of Medicine, New Haven, as associate in pediatrics at California. Dr. Sinclair will spend part of his time teaching at the university and in addition he will be a pediatric "circuit rider," traveling over California as an agent of the state health department. He will act as a consultant for county medical societies, individual physicians and groups involved in the care of young children. The new plan is an extension of the postgraduate "well baby program" started more than a year ago, which is under the direction of Dr. Amos Christie, associate professor of pediatrics in the medical school.

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Postgraduate Courses in Obstetrics

The Indiana State Medical Association, in cooperation with the Indiana University School of Medicine and the state board of health, is again sponsoring both intramural and extramural postgraduate courses in obstetrics during the coming year. Four two weeks sessions will be given at the Coleman Hospital, Indianapolis. Each session is open to six physicians, who will reside at the hospital, where they can be in close con-

tact with the clinical work both at the university hospitals and at the city hospital. The dates for these intramural courses will be October 13-25; January 12-24, 1942; April 13-25, 1942, and July 13-25, 1942. There will be no charge for room and board, and the required deposit of \$10 will be refunded on the satisfactory completion of the course. The courses are made possible without cost through the cooperation of the bureau of maternal and child health of the state board of health with Indiana University Hospitals. They are under the direction of Dr. Carl P. Huber, associate professor of obstetrics at the medical school. The extramural courses are available by arrangement with Dr. Huber and are offered to any area of the state in cooperation with the local county medical society.

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The Bevan Lecture

Dr. William E. Ladd, Boston, delivered the thirteenth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society, October 3. His subject was "Children's Surgery and Its Relation to the Specialties." Dr. Ladd is William E. Ladd professor of surgery at Harvard Medical School. The professorship was endowed by a group of friends of Dr. Ladd in recognition of his contributions to the field of surgery in children.

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Helis Institute for Medical Research

The Helis Institute for Medical Research has been created by a trust fund made available by William G. Helis of New Orleans to provide funds for the conduct of medical research and the advancement of the medical sciences. The institute intends to establish various clinical and experimental divisions at medical schools and hospitals, the first of which has already been set up as the Center of Research of Hotel Dieu Hospital. All research carried on at these centers will be financed by the institute.

Dr. Carlo J. Tripoli, assistant professor of medicine, Louisiana State University School of Medicine, New Orleans, has been appointed director of the institute.

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Course on Geriatrics

The Medical Society of Milwaukee County has announced a course of post-graduate lectures on geriatrics to be given at Marquette University School of Medicine in November with the following speakers:

Dr. Jacob Meyer, Chicago, "Gastroenterology in the Aged;" Dr. Oscar T. Clagett, Rochester, Minn., "Treatment of the Aged from the Surgical Angle;" Dr. George M. Piersol, Philadelphia, "The Problem of Aging from the Internist's Angle;" Dr. Hans H. F. Reese, Madison, "The Central Nervous System in the Aged."

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P. S. Pelouze Award

The American Neisserian Medical Society has established an annual prize of \$100, to be known as the P. S. Pelouze Award, to be presented to the person under 35 years of age who has made the outstanding contribution to the control of gonorrheal infection during the preceding year.

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The Society of the New York Hospital Lewis Cass Ledyard, Jr. Fellowship

The Lewis Cass Ledyard, Jr. Fellowship was established in 1939 by a gift from Mrs. Ruth E. Ledyard, wife of the late Lewis Cass Ledyard, Jr., a Governor of The New York Hospital. The income, amounting to approximately \$4,000.00 annually, will be awarded to an investigator in the fields of medicine and surgery, or in any closely related field. This amount will be applied as follows: \$3,000.00 as a stipend and, approximately, \$1,000.00 for supplies or expenses of the research.

In making the award, preference will be given to younger applicants who are graduates in medicine, and who have demonstrated fitness to carry on original research of high order. The recipient of this Fellowship will be required to submit reports of his work under the Fellowship, either at stated intervals or at the end of the academic year; and when the result of his work is published he will be expected to give proper credit to the Lewis Cass Ledyard, Jr. Fellowship. The research work under this Fellowship is to be carried on at The New York Hospital and Cornell University Medical College. The fellowship will be available on July 1st at the beginning of the academic year. Applications for the year 1942-43 should be in the hands of the Committee by the 15th of December. It is expected that the award will be made by March 15, 1942.

Application for this Fellowship should be addressed to: The Committee of the Lewis Cass Ledyard, Jr. Fellowship, The Society of The New York Hospital, 525 East 68th Street, New York, N.Y.

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U. S. Civil Service Examinations for Medical Officers

The United States Civil Service Commission announces open competitive examinations for senior medical officer (\$4,600); medical officer (\$3,800); associate medical officer (\$3,200). Vacancies in these positions in Washington, D. C., and in the field, and vacancies in positions requiring similar qualifications will be filled from these examinations, unless it is found in the interest of the service to fill any vacancy by reinstatement, transfer, or promotion.

Senior Medical Officer.—To become eligible in this grade applicants must qualify in one of the following optional branches and must state in their applications the branch desired: 1. Aviation medicine. 2. Cardiology. 3. Public health, general.

Medical Officer and Associate Medical Officer.—To become eligible in these

grades applicants must qualify in at least one of the following optional branches and must state in their applications the branch or branches desired:

Aviation medicine; cardiology; dermatology; eye, ear, nose, and throat (singly or combined); general practice; industrial medicine, (a) gas analysis, or toxic dust, (b) general; internal medicine and diagnosis; medical pharmacology; neuropsychiatry; pathology, bacteriology and roentgenology (singly or combined); public health, (a) general, (b) venereal; surgery, (a) general, (b) orthopedic, (c) chest; tuberculosis; urology; cancer, (a) research, (b) diagnosis and treatment.

The registers resulting from these examinations will be used for filling vacancies in certain optional branches in the Public Health Service, and Food and Drug Administration, Federal Security Agency; Veterans' Administration; Civil Aeronautics Administration, Department of Commerce; and the Indian Service, Department of the Interior.

Salaries are subject to a deduction of $3\frac{1}{2}$ percent toward a retirement annuity. Appointments in the Indian Service will be made to the position of Associate Medical Officer at \$3,200 a year for service in the States, and at \$4,600 a year for service in Alaska.

Further deductions: *Public Health Service.*—\$600 a year for quarters, \$330 for full subsistence, and \$60 for laundry when furnished. *Veterans' Administration.*—Approximately \$480 a year for quarters, subsistence, and laundry when furnished. *Indian Service.*—Approximately \$300 a year for quarters, fuel, and light in the States and \$240 a year in Alaska. If board is furnished, \$180 additional is deducted in the States and \$420 a year additional in Alaska.

Application forms may be obtained from the U. S. Civil Service Commission, Washington, D. C., and at any first or second class post office, except in district headquarters cities where forms must be obtained from U. S. Civil Service District office. The title of the examination desired should be stated.

William Osler Medal

The American Association of the History of Medicine has established a medal that will be granted annually to the author of the best student essay submitted. The medal is named in honor of William Osler.

The first award will be made at the eighteenth annual meeting of the Association to be held in Atlantic City, May 3, 4 and 5, 1942.

Essays written during the academic year, 1940-1941, by medical students not yet granted the M.D. degree, will be considered. Preference will be given to essays based on original research on

historical problems. Essays should be sent to Dr. Henry E. Sigerist, 1900 East Monument Street, Baltimore.

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Dazian Foundation Fellowship

Dr. Enrique Washington Lithgow of the Hospital Padre Billini of Ciudad Trujillo, Dominican Republic, is the first physician to fill the fellowship created by the Dazian Foundation for Medical Research of New York City at the Mount Sinai Hospital for the benefit of physicians from the Latin-American republics.

Abstracts of Current Literature

The Internship: A Hospital and Medical School Program

What can be said to be the common objective of hospitals and medical schools? If it is necessary to answer this in the singular it most certainly would be "to provide in this country the most efficient medical care." The provision of this type of medical care places on the hospital a dual opportunity or task, that of an educational program and that of caring for the sick entrusted to it. The success with which the hospital meets these opportunities depends primarily on the success of its educational program, and one reverses the old assertion that a hospital's first responsibility is the care of the sick and its second an educational program, and gives priority to education. Good medical care is simply the effective application of the skills and knowledge achieved through education. Thus, education must precede and accompany application.

No matter what devices are used to evaluate the quality of service offered by a hospital, these devices are simply measures of the educational activities present in that hospital, carried on by

the visiting staff, the intern staff, the nursing staff, the dietary staff, the house-keeping staff, the maintenance staff, the administrative staff, its laboratory and other professional staffs. These units of hospital work are all closely related and their activities are interdependent so that no one of them can lag far behind without holding back all the others. The intern service is the hub around which educational activities revolve.

On their part, the participation of the medical schools is prompted by the desire to meet their responsibility: first, to find avenues of continuing the education of their students; and second, to take part in the job of conceiving and executing a program of medical education which extends from the moment the young man decides to be a physician to the last moment of his professional life. The extent to which medical knowledge has advanced and the amount of material necessary to present to the student have made it no longer possible for the medical school to complete the student's education in the four years allotted to the medical curriculum. Further time is required in which to mature the mind of the student, giving him guided ex-

perience in studying the problem of the patient, in acquiring new knowledge and skills, and in making him in the future a useful instrument in the satisfactory practice of medicine. This holds true whether he intends entering general practice or subsequently preparing himself for one of the specialties. The fact of the matter, therefore, is that the internship is now a part of medical education, and an important part.

If now we return to the earlier premise that its educational opportunities are the hospital's first and greatest responsibility we can inquire into how the internship is affected. There is no use in saying that interns are the most important people in the hospital. Hospital service is a cog wheel, needing every one of its cogs. Nevertheless, "By their interns you shall know them," meaning that no hospital can be truly great without a great intern organization. Too many things depend on effective intern work. In the modern hospital the intern actually has responsibility, either directly or secondarily, for the welfare of the patients within it. The intern actually practices medicine, of course under supervision. It is the quality of this supervision which in large part determines the quality of the internship.

The foundation of intern education is the opportunity for the intern to analyze the problem which brings the patient to the hospital and to experience the therapeutic measures used to give relief. When, in the future, this intern becomes a practitioner and goes about his work of service, he will be thinking in terms of the patients he studied "in hospital" and not of abstract textbook descriptions.

This fundamental requirement brings

in a number of implications. It is first implied that there will be a suitable number and variety of patients to give broad experience. Again, the number of patients for whom the intern is responsible should not be so large as to make it impossible for him to find time to do the reading and study necessary for complete study. Such study, of course, implies an easily available library of medical literature.

The second implication is that each member of the visiting staff will be as interested as the intern in the study of patients under his care. This means that there will be an interchange of ideas between him and the intern, including a review of the intern's history and physical examination, a comparison of ideas of diagnosis and treatment, and mutual ventures into the medical literature which may apply in any instance.

Failure on the part of the visiting physician to meet his educational responsibility to the intern places the intern on his own and gives no advantage over starting at once in practice with the possible exception that he has more patients with whom to deal. Men who are now being graduated from medical school do not wish to be spoon fed. On the other hand, they do not wish to be placed entirely on their own resources and they no longer feel that unlimited privileges in the care of patients is advantageous to their progress. It is true that one learns by doing. One learns best, however, by guided effort. Interns now evaluate an internship in terms of supervised privileges which, after all, is another way of saying that their interest is in the educational program.

OPPENHEIMER, R. H.: *Southern M. J.*, 34:550-553 (May), 1941.

Book News

Microbes Which Help or Destroy Us

By Paul W. Allen, Ph.D.; Professor and Head of the Department of Bacteriology; D. Frank Holtman, Ph.D., Associate Professor of Bacteriology, and Louise Allen McBee, M.S., formerly Assistant in Bacteriology, University of Tennessee. The C. V. Mosby Company, St. Louis. 1941. Price, \$3.50.

This book is a combination of a series of lectures given by the authors to students of bacteriology in the University of Tennessee. It is a most interesting book; reads like a novel; is as fascinating as a detective story. It teems with historical notes related to the subject matter and holds the reader's interest from first to last—even he who has studied bacteriology. The student of the subject will be stimulated to do his best to learn and will not want to lay down the book until he has finished its reading—even if it takes all night to do it. It is easily outstanding; one of the best books on bacteriology to come off the press. The authors deserve unstinted praise for their work.

* * *

The Man Who Lived for Tomorrow

A Biography of William Hallock Park. By Wade W. Oliver, M.D., Professor of Bacteriology in the Long Island College of Medicine. E. P. Dutton & Co., New York. 1941. Price, \$3.75.

This remarkable story of the "American Pasteur," who led the fight to control and conquer diphtheria, is at once the biography of a great specialist and the record of distinguished accomplishment in the field of public health. The story is told by Dr. Oliver in his usual masterful style as only he could tell it. He has added another epic to his long list of fine works. The soul of the poet shines brilliantly on every page.

While director of the Bureau of Laboratories of New York's Health Department, Dr. Park was cited by Yale University as "the perfect type of the scientist in the service of the State." As the "family doctor to New York's millions," he saved the lives of thousands of children by his diphtheria antitoxin, and wrote his name among the immortals whose discoveries have checked and conquered disease.

It was his inquiring mind and thoughtful laboratory study which traced infectious diseases to micro-organisms, established the "germ theory" of contagious disease, and led to the development of preventive medicine. Today the germ theory is the cornerstone of American medicine. From it has come the Schick test for diphtheria, toxin antitoxin,

the Park findings of preventive medicine for measles, scarlet fever, pneumonia, and a host of other contagious diseases.

While Dr. Park's work on diphtheria, was the outstanding achievement of his life, there is scarcely an area in the field of public health which has not been affected by his laboratory research.

* * *

Cardiac Clinics

A Mayo Clinic Monograph. By Frederick A. Willius, M.D., Head of Section of Cardiology, Mayo Clinic, and Professor of Medicine, Mayo Foundation, Graduate School University of Minnesota. The C. V. Mosby Company, St. Louis. 1941. Price, \$4.

Presenting the problems of heart disease in a way that they must be met in the daily practice of medicine, in diagnosis and treatment. The case records are actual records of patients. They represent, largely, the common run of diseases encountered in practice. Necropsy findings are recorded fully; discrepancies between clinical diagnosis and pathologic diagnosis are discussed frankly with the purpose of learning ways and means to lessen diagnostic errors. Practitioners of medicine will find this a valuable help. Students of medicine will do well to use the book in their clinical work. It is a masterpiece in this field.

* * *

A Manual of Bandaging, Strapping and Splinting

By Augustus Thorndike, Jr., M.D., Associate in Surgery, Harvard Medical School. Lea & Febiger, Philadelphia. 1941. Price, \$1.50.

This book gives the student what he needs to know if he is to succeed in the practice of medicine. Larger works on surgery do not fill the need as does this book. There is little of text. The many excellent illustrations are sufficiently explanatory to be followed easily in practice. Its size makes it possible to carry it in a pocket. Its arrangement affords quick reference.

This manual demonstrates the proper technique of dressing, bandaging and splinting. It emphasizes the principles of support, elevation, immobilization and gentle compression. It presents in elementary fashion the common types of bandages, strappings and splints and follows, in general, the bandaging course given in the Harvard Medical School. The technique of the use of dressings, bandaging, adhesive plaster and splints is presented fully.

The Principal Nervous Pathways

By Andrew T. Rasmussen, Ph.D., Professor of Neurology, University of Minnesota Medical School. 2d ed. The Macmillan Company, New York. 1941. Price, \$2.50.

A deservedly popular book, bringing in a simple manner to the student a difficult subject to master especially in the short time allotted to its teaching in the medical curriculum. The many splendid diagrams are an aid to clarifying the subject in a logical way in the student's mind and helping him really to learn and to know the importance of neuroanatomy and to appreciate the value of that knowledge in the practice of medicine in which diseases of the nervous system play an important role today.

* *

Diseases of the Blood and Atlas of Hematology

With Clinical and Hematologic Descriptions of the Blood Diseases, Including a Section on Technic and Terminology. By Roy R. Kracke, M.D., Professor of Bacteriology, Pathology and Laboratory Diagnosis, Emory University School of Medicine. 2d Ed. J. B. Lippincott Company, Philadelphia. 1941. Price, \$15.

Revised and enlarged. Includes new material on fractionation of liver extract, hemolytic anemias, hemoglobinuria, action of drugs on blood, a new section on hemoglobin and its derivatives as well as the porphyrin compounds; a comprehensive section on blood transfusion, the operation of a blood bank and the use of blood plasma, with a recital of recent work on bone marrow; a complete section on the development of vitamin K. The chapter on the treatment of leukemia includes recent advances in the use of radiation and radio-active isotopes. Omissions of the first edition have been corrected. The author must be congratulated on his work. In one volume, beautifully illustrated—54 exquisite color plates and 46 black and white illustrations—is presented all there is known on blood. Deserving special mention is the paper stock, wholly free from glare, and the easily read type. Even the color plates, which are of the finest workmanship, do not "glare" at the reader.

* *

Synopsis of Applied Clinical Chemistry

By Jerome E. Andes, M.D., Director of Department of Health, University of Arizona, and A. G. Eaton, Ph.D., Assistant Professor of Physiology, Louisiana State University School of Medicine. The C. V. Mosby Company, St. Louis. 1941. Price, \$4.

A simple, practical exposition of the application of pathological chemistry to clin-

ical medicine. At the end of many of the chapters or divisions, the more important part of the subject matter is summarized in tables which fix them more firmly in the student's mind. The authors stress the point that biochemical laboratory analyses are not superior to clinical observations because only in rare instances are they diagnostic. They should be used only to supplement clinical findings and should be relied on only when carried out by competent laboratory workers. The subject matter is presented in five parts: chemistry (1) of the blood; (2) of the cerebrospinal fluid; (3) of the urine; functional tests; gastric analysis and basal metabolism. In the appendix are given the preparation of reagents and standard solutions.

* *

Textbook of General Surgery

By Warren H. Cole, M.D., Professor and Head of the Department of Surgery, University of Illinois College of Medicine, and Robert Elman, M.D., Associate Professor of Clinical Surgery, Washington University School of Medicine. 3d ed. D. Appleton-Century Company, New York. 1941. Price, \$8.

Detailed discussion of specialties eliminated, except allied specialties of genitourinary surgery and gynecology. Certain features of neurosurgery are included, particularly in regard to head injuries. The subject matter is presented from a physiological point of view. Pathogenesis is emphasized. Surgical pathology receives a large amount of attention. Operations, although discussed in principle, are not described in detail, except a few of the more common ones. Particular attention is given to open wounds and burns. Emphasis is placed on the use of silk in the repair of wounds. The material on amputations and anesthesia has been enlarged into separate chapters. A new chapter on diabetes has been added. Many additions have been made on topics bearing on current thought and usage thus bringing the book wholly up-to-date. A bibliography is appended to each chapter. In some instances the list is rather a lengthy one. It is questionable whether this has much value since users of textbooks rarely have access to literature—and the size of the book is made greater.

* *

Practical Methods in Biochemistry

By Frederick C. Koch, Frank P. Hixson Distinguished Service Professor of Biochemistry, University of Chicago. 3d ed. A William Wood Book; The Williams & Wilkins Company, Baltimore. 1941. Price, \$2.25.

A fine laboratory manual for medical students, divided into three parts: I: The Chemistry of Cell Constituents; II: Chemis-

try of the Digestive Tract; III: Blood and Urine. An appendix gives general instructions and an alphabetical list of reagents and the amounts needed per student.

* *

Handbook of Communicable Diseases

By Franklin H. Top, M.D., Director, Division of Communicable Diseases and Epidemiology, Herman Kiefer Hospital and Detroit Department of Health; Associate Professor of Preventive Medicine and Public Health, Wayne University College of Medicine; Special Lecturer in Communicable Diseases and Epidemiology, University of Michigan; and Collaborators. The C. V. Mosby Company, St. Louis. 1941. Price, \$7.50.

The diseases are classified by common portal of entry—a scheme which should prove useful to the student. Under the respiratory portal of entry, the diseases are further classified alphabetically into those caused by bacteria and those caused by viruses. In the appendix are given many statistical data compiled from the records of the Herman Kiefer Hospital. The glossary will be found most useful and helpful to students.

* *

A Textbook of Pathology

Edited by E. T. Bell, M.D., Professor of Pathology in the University of Minnesota. 4th ed. Lea & Febiger, Philadelphia. 1941. Price, \$9.50.

This work has been thoroughly revised and considerably enlarged. It offers a large amount of entirely new material. Pathological physiology has been included in connection with the majority of diseases in which well established data are available. Throughout, the text is brought in accord with current medical thought, but a conservative attitude toward opinions which are not yet widely accepted has been maintained.

Its objective has been to furnish the medical student with a textbook which he may use during his clinical training and to supply a useful reference book to the practicing physician. The authors feel that clinical medicine should be considered as a direct continuation of pathological studies and not as an abrupt entrance into a new field. The subject is presented as a living science of the nature and causes of disease on which all successful practice of medicine must ultimately be based.

* *

Clinical Immunology, Biotherapy and Chemotherapy in the Diagnosis, Prevention and Treatment of Disease

By John A. Kolmer, M.D., Professor of Medicine, Temple University School of

Medicine and Louis Tuft, M.D., Assistant Professor of Medicine and Chief of Clinic of Allergy and Applied Immunology. W. B. Saunders Company, Philadelphia. 1941. Price, \$10.

Aside from having value for the practitioner, this book also serves as a textbook for medical students. Part 1 is used by the senior author in the course of instruction in bacteriology, mycology, parasitology and the principles of immunity given in the sophomore year, while Part 2 serves as a text in the instruction in advanced immunology, biotherapy and chemotherapy given in connection with therapeutics in the junior and senior years.

* *

The Mask of Sanity

By Hervey Cleckley, M.D., Professor of Neuropsychiatry, University of Georgia School of Medicine. The C. V. Mosby Company, St. Louis. 1941. Price, \$3.

The author attempts to reinterpret the so-called psychopathic personality. The material is presented by means of reports of fifteen cases. It is maintained that if these patients can be recognized as being disabled psychiatric cases they can be treated more satisfactorily. Possible therapeutic approaches to the problem are discussed.

Exercises in Electrocardiographic Interpretation

By LOUIS N. KATZ, M.D.
Director of Cardiovascular Research,
Michael Reese Hospital

Imperial octavo, 222 pages, with 128 engravings containing 189 electrocardiograms. Fabricoid, \$5.00, net.

This book offers the best method of teaching the reading of electrocardiograms. It presents an approach and analysis to an unknown electrocardiogram and illustrates its instructions with a detailed study of 90 cases.

LEA & FEBIGER

Washington Square Philadelphia, Pa.

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